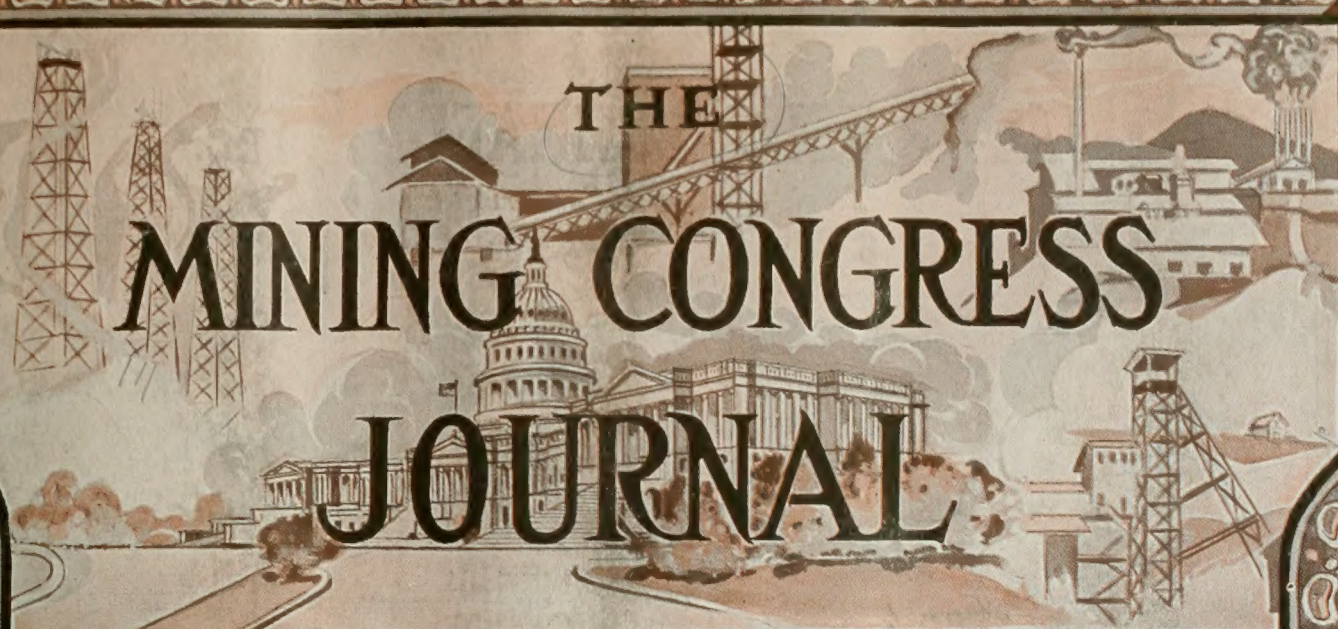


JULY, 1922

THE MINING CONGRESS JOURNAL



VOLUME 8

NUMBER 7

TN
/
M6
v. 8
no. 7

Physical &
Applied Sci
Serial
Engineering

The Keynote of The Western Mining Conference



"THIS conference of mining men, representing the mining industry of the entire West, protests most emphatically against paternalism and governmental interference with private business and personal liberties and initiative and calls for the abolition of the many unnecessary bureaus, commissions and other tax-consuming agencies, both state and national, continually seeking new fields in which to justify salaries at the expense of the public, thus adding constantly to the burdens of taxation."

—Resolution adopted at Denver, Colo., June 20, 1922

Detailed report of conference in this issue

ENGIN STORAGE

\$3.00 Per Year

30c Per Copy

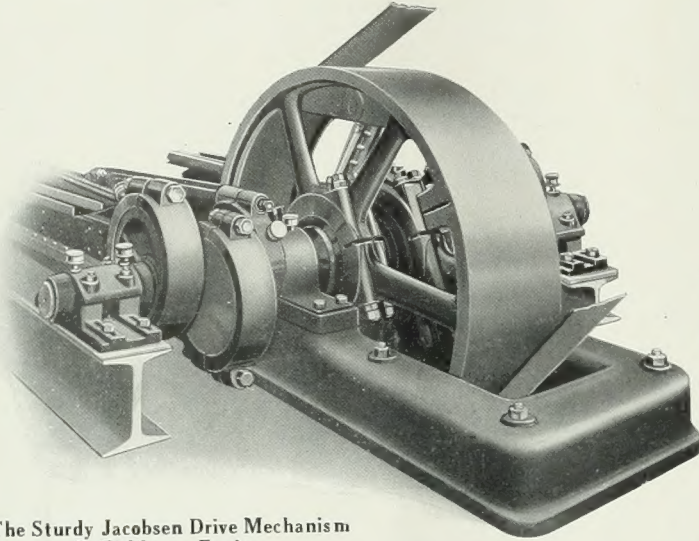


JACOBSEN & SCHRAEDER, Inc.

Engineers and Constructors

Chicago

Pittsburgh



The Sturdy Jacobsen Drive Mechanism
Built like an Engine

DESIGN AND CONSTRUCTION
OF
Complete Modern Coal Mining
Plants
Coal Tipples and Storage Plants
Coal Docks
Material Elevating and
Conveying Plants

NOTICE OF PATENTS

The United States Patent Office has granted several Letters Patent on the various drives and screen arrangements embodied in Jacobsen & Schraeder, Inc., tipples. Patents have also been granted in Canada, Great Britain, France, Germany and other foreign countries. All clients have full protection under these patents and infringers will be prosecuted.



HORIZONTAL AND INCLINED

SCREENS
FEEDERS
CONVEYORS
DRYERS

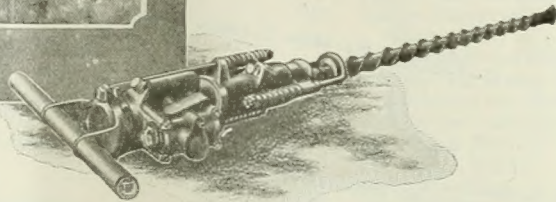
Complete Tipple and Power Plant using Jacobsen Balanced Horizontal Picking Table Screen—Typical Installation for a Stripping Operation

Investigate our Equipment

Write today for Details



Turning the Trick



TO "turn the trick" in either auger or rock drilling, you must turn the steel, turn it fast and hard, and keep on turning it until the hole is finished.

THAT'S just where many small, light air drills are apt to fall down, but it's one of the Waugh "Ninety's" many happy features. You know the "Ninety" will finish whatever it starts, because of its exceptionally powerful, steady and constant rotation.

IF the steel happens to stick for a moment, instead of cuss words and sledge hammer, you merely give her a little more air and the "Ninety" will walk right through the rock until the hole is completed.

LET the Waugh "Ninety" turn the trick in your mine. Send for your copy of the "Ninety" booklet today.

THE Denver Rock Drill Manufacturing Co.

Denver, Colorado

San Francisco
Scranton
El Paso

Los Angeles
Seattle
Salt Lake City

Joplin
Wallace
Birmingham

Lima
Santiago
Duluth

New York City
Houghton
Butte

Melbourne
Johannesburg
Mexico City

Canadian Rock Drill Company, Limited
Sole Agents in Canada

Toronto

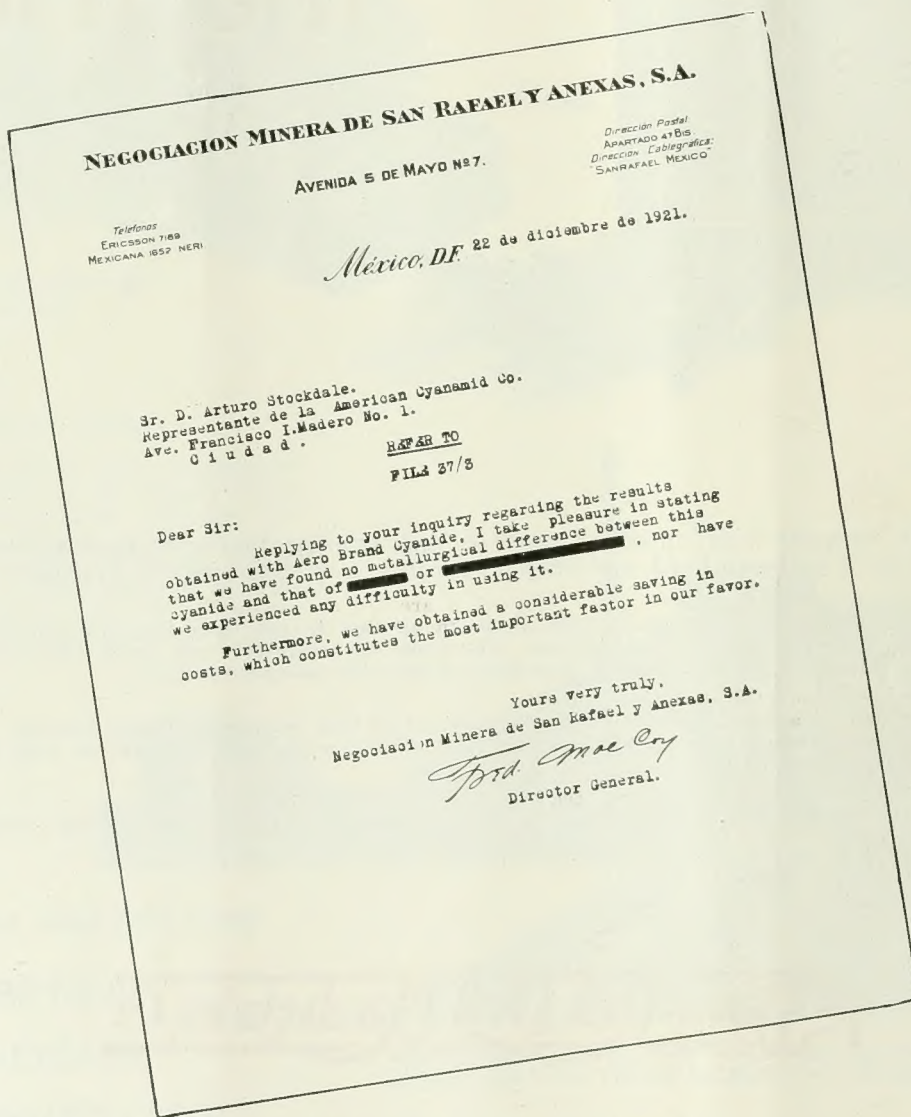
Cobalt

Nelson

Vancouver

K-34

AERO BRAND CYANIDE



AMERICAN CYANAMID COMPANY
 511 Fifth Ave. New York

THE MINING CONGRESS JOURNAL

JULY

CONTENTS

1922

Illustrations	Page		Page
L. Bradford Prince.....	787	Mining Congress Journal Advertising Announcement...	785
William J. Loring.....	787	Simplification of Alaska's Mining Relations With U. S. is Aim of New Plan.....	786
James F. Callbreath.....	787	Alaskan Road Building Program Recommended.....	786
Sidney Norman.....	787	Latest Mining Revision Hearings Develop Both Sides of Question.....	790
Halleck W. Seaman.....	787	Accelerated Tariff Action Brings Decision on Mineral Item.....	791
Daniel M. Kelly.....	787	Naval Fuel Appropriations.....	792
A. G. McKenzie.....	787	Constructive Comment on Standardization.....	794
Senator Samuel D. Nicholson.....	791	Refiners to Aid Compilation of Oil Investigation Data...	796
Senator Frank R. Gooding.....	791	Coal Division in Commerce Bureau.....	796
Senator T. L. Oddie.....	791	Dangerous Legislation Seeks to Limit Appeals From State Commissions' Decisions.....	797
Senator T. J. Walsh.....	791	Coal Ventilation Studies.....	798
Senator H. O. Bursum.....	791	Federal Trade Commission Issues Bituminous Coal Report	798
Gerald Sherman.....	793	Heavy Decrease in Coal Exports.....	798
Charles S. Thomas.....	797	War Minerals Cases to be Speeded by Increased Staff...	799
George Otis Smith.....	801	Smaller Land Offices Are Closed.....	800
H. Foster Bain.....	803	Magnesite in 1921.....	800
Representative T. Frank Appleby.....	804	Labor Department Attempts Analysis of Irregular Coal Operation.....	802
Shale Deposit Near Watkins, Utah.....	805	New Funds Available for Bureau of Mines.....	803
Representative Frank Mondell.....	807	Alcohol as Motor Fuel.....	804
E. A. Holbrook.....	820	Conference on Water Pollution Proved by Congress.....	804
		Action on Cost Data Case.....	804
		Oil Shale Fact of Value Developed by Sworn Testimony.....	805
		Oil Shale Notes.....	806
		Britain's Place in Export Coal Trade Hangs in Balance..	806
		Secretary Fall Defends Oil Policy.....	806
		Cheaper Phosphor Copper.....	808
		Combine of U. S. Oil Capital Awaits Clearing of Europe's Affairs.....	808
		Cleveland Mining Equipment Display to be Exceptionally Comprehensive.....	809
		Preliminary List of Exposition Exhibitors.....	810
		Coronado Decision Sets Important Precedent.....	811
		Fluorspar in 1921.....	811
		National Legislation.....	812
		New Capital Stock Regulations Are Issued.....	816
		Changes in Use of Explosives.....	816
		Gasoline Transportation Hazards.....	816
		Transportation.....	817
		Drill Steel Survey Report.....	818
		New Loading Device.....	818
		Use of Troops in Labor Troubles.....	818
		Radio Adaptable to Mine Rescue Work.....	818
		New Gas Mask Developed.....	818
		Wide Range of Subjects Among List of Bureau of Mines' Studies.....	819
		Idle Coal Lands Used.....	821
		Patents.....	823

Editorials

Organized Labor on Trial.....	781
Cooperative Business Administration.....	782
The Ship Subsidy.....	782
Muscle Shoals Development.....	783
Tax Wasting.....	783
The Coronado Decision.....	784
When Power Goes Amuck.....	784

Feature Articles

Western Mining Conference Takes Stand Against Governmental Paternalism—By Burton Bunch.....	787
Standardization of Mining Timbers—By Gerald Sherman	793
Coal Investigation Seen as Element in "Permanent Settlement" Plan—By Ira L. Smith.....	795
The Broken Year and How to Mend It—By George Otis Smith.....	801
Character Sketch of Representative Mondell—By Ira L. Smith.....	807

News

Closer Relation With Industry Sought by Bureau of Mines	785
European Nations Make Efforts to Replace U. S. Gasoline	785

Published every month by the American Mining Congress, Washington, D. C.

OFFICERS

WILLIAM J. LORING <i>President</i>
DANIEL B. WENTZ <i>1st Vice President</i>
E. L. DOHENY <i>2d Vice President</i>
THOMAS T. BREWSTER <i>3d Vice President</i>
J. F. CALLBREATH <i>Secretary</i>

DIRECTORS

BULKELEY WELLS, <i>Denver, Colo.</i>
DANIEL B. WENTZ, <i>Philadelphia, Pa.</i>
JOHN C. HOWARD, <i>Salt Lake City, Utah</i>
THOMAS T. BREWSTER, <i>St. Louis, Mo.</i>
H. W. SEAMAN, <i>Chicago</i>
SIDNEY J. JENNINGS, <i>New York City</i>
HUGH SHIRKIE, <i>Terre Haute, Ind.</i>
ROBERT LINTON, <i>New York City</i>
JAMES S. DOUGLAS, <i>Douglas, Ariz.</i>
E. L. DOHENY, <i>Los Angeles, Calif.</i>
CARL SCHOLZ, <i>Charleston, W. Va.</i>
WILLIAM J. LORING, <i>San Francisco, Cal.</i>

STAFF

GEORGE H. BAILEY <i>Counsel</i>
HERBERT WILSON SMITH <i>War Minerals</i>
E. C. PORTER <i>Convention Manager</i>
McK. W. KRIEGH <i>Tax Division</i>
E. H. PULLMAN <i>Information Service</i>
IRA L. SMITH <i>Editor</i> <i>Mining Congress Journal</i>
E. R. COOMBES <i>Business Manager,</i> <i>Mining Congress Journal</i>

Entered as Second Class Matter January 30, 1915, at the Postoffice at Washington, D. C.

The Roessler & Hasslacher Chemical Company



709-717 Sixth Avenue
NEW YORK, N. Y.



Works:

PERTH AMBOY, N. J.

NIAGARA FALLS, N. Y.

ST. ALBANS, W. VA.

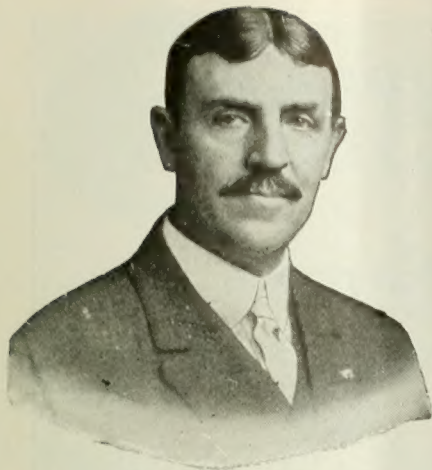


Cyanide of Sodium 96-98%

Cyanogen contents 51-52%

“Cyanegg”

or Cyanide of Sodium 96-98% In egg form, each egg
weighing approximately one ounce

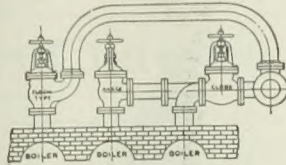


Charles E. Golden
President and General Manager

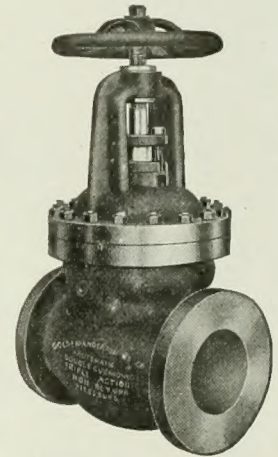
For Business Reasons

"Aside from SAFETY which always stands first—a plant that is likely to shut down from a PREVENTABLE reason, can hardly be said to be backed by sound business judgment.
"Think of the cost of a shutdown of only a few hours! A few dollars judiciously invested in truly reliable safety devices that PREVENT SHUTDOWN due to back flow of steam or its sudden release through a broken steam pipe are well invested. There could not be a better investment made, when the added PROTECTION to life is considered."

C. E. GOLDEN.



No shut down when a boiler tube bursts



Angle
Globe
or
Elbow

GOLDEN-ANDERSON Life and Property Insurance Valves

These patent automatic double-cushioned triple-acting and non-return valves have made good in thousands of plants. They are as vital to safety from back flow or the sudden release of high pressure steam as pop safety valves are to give protection from dangerous over-pressure. They will cut off a boiler instantly when a tube ruptures. They prevent live steam from entering a cold boiler.

Automatically cut in and cut out boilers until the pressure between all boilers is equalized.

Automatically cut off steam flow from every boiler—the instant that a steam pipe bursts.

Will not chatter, pound or spin.

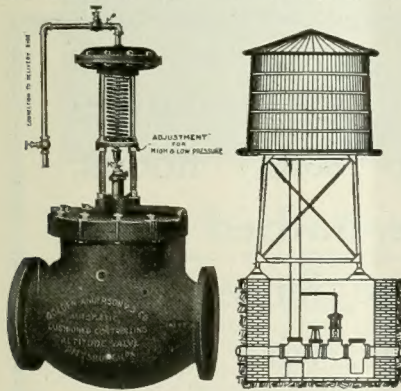
The only valve that can be tested in service.

4100 Used By The
Steel and Iron Industry

DOUBLE EXTRA HEAVY VALVES

Stop Water Waste

down overflows of reservoirs, standpipes, tanks, etc., by automatically maintaining the water level constant at the desired level with



Golden - Anderson Pat.

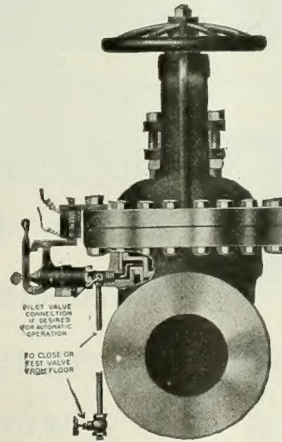
Cushioned Automatic Altitude Controlling Valves

They operate without floats or fixtures.

Three ways of closing:

1. By water.
2. By electricity from distant points.
3. By hand.

Sizes to 30"



Golden - Anderson

Pat. Cushioned Combination Throttle and Automatic Engine Stop Valves

Automatically tripped by over-speeding engine or turbine.

Electrically operated from distant points. Emergency tripped by small branch pipe connection.

Hand operated by hand wheel. Double cushioned by Corliss dash-pots—positively no hammering or pounding.

Double extra heavy throughout—practically indestructible. Suitable for any pressure—no adjustment.

Globe or Angle Patterns—Sizes to 30 inches



Golden - Anderson

Patent Automatic Double Cushioned Check Valves

1. Perfectly control the reverse flow of water in case pump stops to eliminate water hammer or shock.
2. Can be adjusted to operate either quickly or slowly.
3. Especially adapted for irrigation systems, water works, etc., having disastrous reverse flow of pressures.
4. Perfect cushioning obtained in opening and closing.

Especially adapted for Hydraulic Elevator Service

Golden - Anderson

Pat. Automatic Cushioned Controlling Float Valves

They carry a constant water level in feed water heaters by perfectly controlling the flow of makeup water.

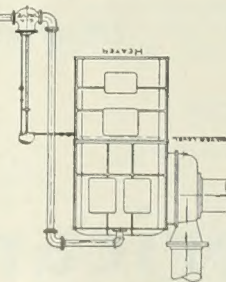
Operated by protected enclosed copper float.

Cushioned by both air and water.

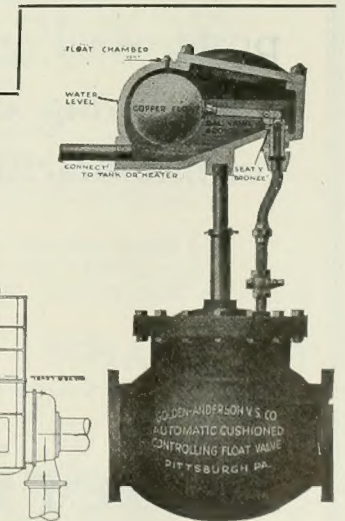
Operate without hammering, sticking or chattering. No metal-to-metal seats.

Made angle or straight-way.

Sizes to 30"



Feed Water Heater



Golden-Anderson Valve Specialty Co., 1304 Fulton Bldg., Pittsburgh, Pa.

A. Leschen & Sons Rope Co.

(Established 1857)

Makers of

Wire Rope for All Purposes

Aerial Tramways

"HERCULES"
RED-STRAND
ROPE

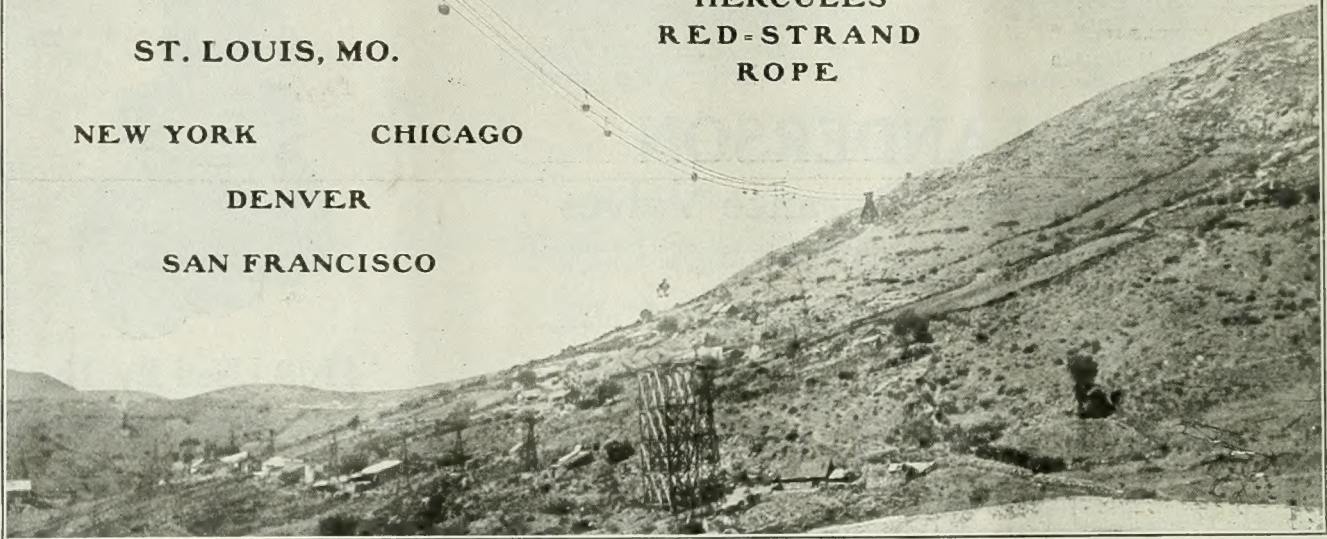
ST. LOUIS, MO.

NEW YORK

CHICAGO

DENVER

SAN FRANCISCO



WIRE

electrical, rope, airplane, piano, pipe-organ, flat wire (strip steel) hoops, bale-ties, tacks, nails, barbed wire, concrete reinforcement, springs, netting, wire fences, steel posts, steel gates, trolley wire and rail bonds, wire wheels, auto-towing cables, horse shoes, round and odd-shape wires, for manufacturing.

Illustrated books describing uses, free

American Steel & Wire Co.

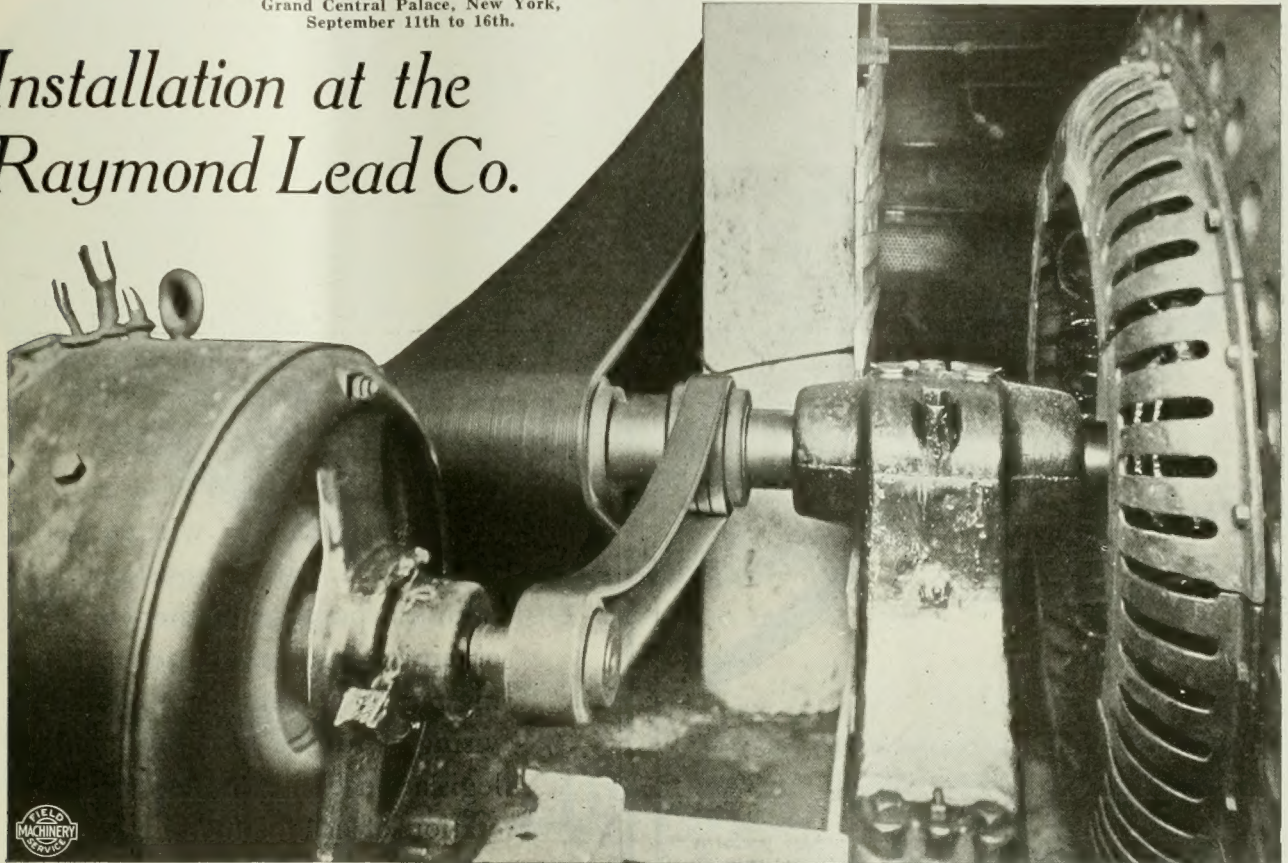
CHICAGO

NEW YORK

MORSE DRIVES

VISIT BOOTH 611
8th National Exposition of Chemical Industries,
Grand Central Palace, New York,
September 11th to 16th.

Installation at the Raymond Lead Co.



O. W. LUDWIG, Plant Superintendent of the Raymond Lead Co., Chicago, says:

"Thirteen years of service without a repair is our experience with two 100 H. P. and ten 20 H. P. Morse Silent Chain Drives.

"When we moved into our present plant 13 years ago, we installed the present Morse equipment of silent chains for our two lead mills and ten hydraulic pumps. Previously we had always used leather belts, but not without considerable trouble. For instance, if the operator was not careful—and gave the motors too great a load, the leather belt would slip and in some cases burn out. While with the Morse Chain Drive we overload them at times up to 150 H. P. without the slightest trouble.

"When we used leather belts on the hydraulic pumps, if a pump packing suddenly gave way, the water would squirt all over the pump as well as the adjoining pumps, causing the leather belts to get wet. This often necessitated a shutdown on 3 to 4 pumps to dry out each belt, thus causing a loss of time by the men, which resulted many times in paying overtime to catch up on the work. Of course, with our Morse Chain Drive we have no such trouble—this positive drive prevents slippage and is not affected by water.

"Leather belts lasted us 2 to 3 years at the most, while our Morse Chain Drives have already lasted 3 to 4 times that long and seem good for many more years. So Morse Drives have cut our expense materially, speeded up production, cut out overtime wages and saved floor space, for they operate on shorter centers."

MORSE CHAIN CO.

Morse Engineering Service

LARGEST MANUFACTURERS OF
SILENT CHAINS IN THE WORLD

ITHACA, N. Y.

Assistance Without Obligation

Benefit by Morse Service[™] as Others Do

Address Nearest Office

ATLANTA, GA.....	Candler Bldg., Earl F. Scott & Co.	MINNEAPOLIS, MINN....	So. 3rd St., Strong-Scott Mfg. Co.
BALTIMORE, MD.....	1402 Lexington Bldg.	MONTREAL.....	St. Nicholas Bldg., Jones & Glassco Reg'd
BOSTON, MASS.....	141 Milk Street	PHILADELPHIA.....	Fuller Bldg.
CHARLOTTE, N. C.....	404 Commercial Bank Bldg.	PITTSBURGH, PA.....	Westinghouse Bldg.
CHICAGO, ILL.....	Merchants L. & T. Bldg.	SAN FRANCISCO, CAL.....	Monadnock Bldg.
CLEVELAND, OHIO.....	Engineers Bldg.	ST. LOUIS, MO.....	Chemical Bldg., Morse Eng'g Co.
DETROIT, MICH.....	1361 Abbot St.	TORONTO.....	Bank of Hamilton Bldg., Jones & Glassco Reg'd
KANSAS CITY, MO.....	Finance Bldg., Morse Eng'g Co.	WINNIPEG, MAN.....	Dufferin St., Strong-Scott Mfg. Co.
NEW YORK CITY.....	30 Church St.		

"MORSE" is the Guarantee Always Behind the Efficiency, Durability and Service

Ario

GREASE

Omega

GREASE

for
AIR DRILLS

ARIO Grease and Omega Grease are two lubricants manufactured especially for use in air operated tools and drills.

The amount of work these tools can perform depends upon two major factors—First, the rate of speed at which they operate and second, their ability to render a maximum of uninterrupted service.

To attain the first, the lubricant used must be light enough to feed properly in the presence of moist air and water. To insure the second, the lubricant must be of a consistency which will not waste excessively or require too frequent replacement.

Ario and Omega greases adhere to wet surfaces and are not washed off by the action of moist air. They do not gum or corrode.

If you have ever experienced trouble in the lubrication of these high speed tools, let us demonstrate how perfectly Ario and Omega greases perform.



STANDARD OIL
COMPANY
(INDIANA)

Chicago, Illinois.

At Your Service

IF YOU have business in Washington with any of the Government Departments, the *American Mining Congress* will be glad to serve its active members without charge, in any way consistent with its purposes, either in obtaining information, securing public documents, in advising as to the progress of legislation or in the consideration of complaints.

The *American Mining Congress* is an organization of service. Write us how we may serve you.

The American Mining Congress

Munsey Building

Washington



Universal Shortwall on a Running Cut in a Wide Room

For Lower Costs—

THE UNIVERSAL CONTROL SHORTWALL

Write for this:



*If you are looking for ways to reduce your operating costs write for our new 56-page book. It will be sent free. Merely write:
"Send Book 222-M"*

The performance of the Universal Control Shortwall has brought out many notable things about this new coal cutter. One thing is its low maintenance cost.

Analyzing the Universal Control you are quick to discover the reason. It is evident that everything which the earlier Goodman Shortwalls did may be done by the Universal Control—and done more easily, smoothly and quickly.

Power on both rope drums has increased its flexibility and has added speed.

What is more, the variable speed control, which automatically regulates the high and low speeds of both rope drums, assures smoothness and exact adaptability to conditions.

The combination of speed and smoothness in cutting enables the Universal Control to do increased work with less effort—and that means reduced maintenance costs.

GOODMAN MANUFACTURING COMPANY

PITTSBURGH

48th to 49th Streets on Halsted

BIRMINGHAM

NEW YORK

CHICAGO, ILL.

ST. LOUIS

CINCINNATI — CHARLESTON, W.VA. — SEATTLE — DENVER



Something Different--

That's the Holmes Helical Adjustable Loading Chute. Works equally well with shaker screens or bar screens. Adjustable to any height car, and always at right angles with the car. Note the spacing between the fingers, which allows the fine coal to fall to the bottom of the car. Does a most wonderful job of topping the car.

□

ROBT. HOLMES & BROS.
INCORPORATED

DANVILLE, ILL.

ACCURATE WEIGHTS

May Mean the Difference Between Profit and Loss

No weighing device has ever proved more satisfactory than the old-fashioned beam scale when time can be taken by a reliable and skilled man to bring it to a perfect balance. But time is not always available, nor is the man in charge of weighing always reliable and skilled. And the weigher can make mistakes detrimental to your interests as well as against the miners.

The Streeter-Amet Automatic Weight Recorder removes all possibility of error in weighing by eliminating the human element from the weighing operation and by automatically printing on a paper tape the weight of each load passing over the scale.

With platform scales of proper length, cars need not be stopped, but can be accurately weighed while moving at a speed of three to four miles per hour.

Where weighing is done in hopper or weigh-pan the recorder can take care of the loads as fast as cars are brought up.

Send for catalogues and data on representative installations

STREETER-AMET WEIGHING AND RECORDING COMPANY

4101-4105 RAVENSWOOD AVE., CHICAGO

Hoists that are out of the ordinary

Vulcan Hoists are out of the ordinary because they are given more than just ordinary attention in construction. They also meet the purpose for which they are designed a little better than any other.

Coal operators and mining engineers of long experience have recognized the efficient design and perfect workmanship of Vulcan Hoists and install them repeatedly.

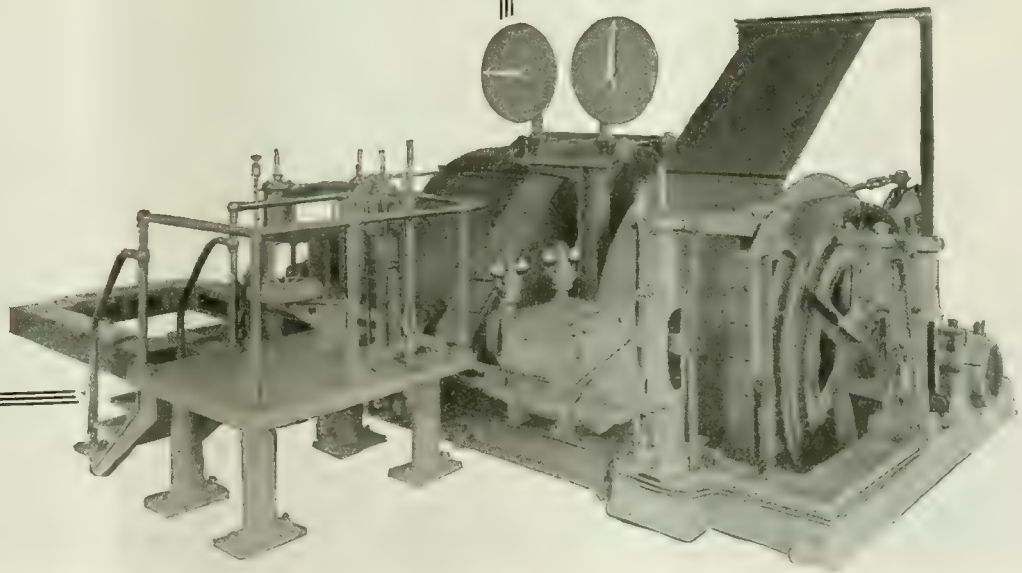
Requirements, of course, vary a great deal. If you will write us, our engineers will be glad to go over your particular requirements in detail and help you in determining the best design for your purpose.

VULCAN IRON WORKS

Established 1849

1736 Main Street, Wilkes-Barre, Pa.

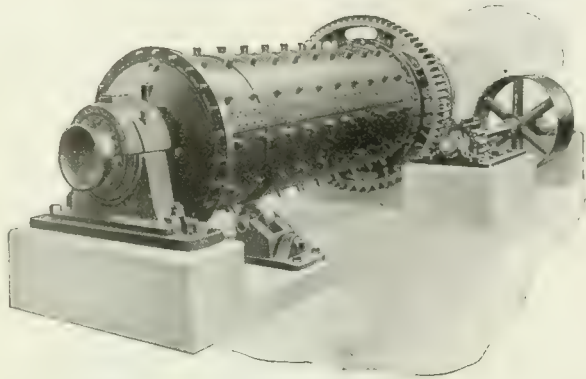
1250 tons of salt in 8 hours from a 1200-foot shaft is the duty for which this 450-h.p. Hoist was designed.



VULCAN OF
WILKES-BARRE
HOISTS



ROD MILLS



5 ft. x 10 ft. Rod Mill

Built for

**SAN FRANCISCO MINES
OF MEXICO LTD.**

PARRAL, CHIHUAHUA, MEXICO

**ALLIS-CHALMERS
PRODUCTS**
Electrical Machinery
Steam Turbines
Steam Engines
Gas and Oil Engines
Hydraulic Turbines
Crushing and Cement
Machinery
Mining Machinery

**ALLIS-CHALMERS
MANUFACTURING COMPANY**
MILWAUKEE, WISCONSIN. U.S.A.

**ALLIS-CHALMERS
PRODUCTS**
Flour and Saw Mill Machinery
Power Transmission Machinery
Pumping Engines-Centrifugal Pumps
Steam and Electric Hoists
Air Compressors - Air Brakes
Agricultural Machinery
Condensers

District Offices in All Leading Cities.



ANACONDA PLANT, GREAT FALLS, MONTANA

**ANACONDA COPPER WIRE
TROLLEY, STRAND, TELEGRAPH, TELEPHONE,
HOT ROLLED COPPER RODS**

—FROM THE MINING OF THE ORE TO THE FINISHED PRODUCT—

ANACONDA COPPER MINING COMPANY
ROLLING MILLS DEPARTMENT

General Office: 111 W. WASHINGTON STREET, CHICAGO

Mills: GREAT FALLS, MONTANA

COALITE

PACKED IN WHITE PAPER CARTRIDGES



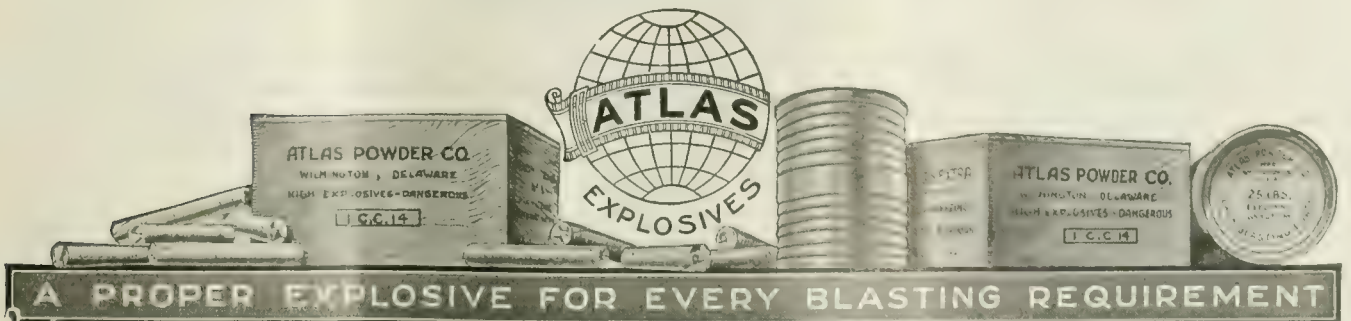
The new line of Atlas Coalite, which is now made in a sufficient number of grades to meet every blasting requirement, includes a grade that is stronger, quicker, weaker or slower than any other permissibles on the market. All requirements were fully rec-

ognized and this new series of Coalites covers every condition met in coal mining.

The Atlas Service Man will show you how these new Coalites offer opportunities for getting BETTER work with a saving in blasting costs. Write to our nearest office.

ATLAS POWDER COMPANY, WILMINGTON, DEL.

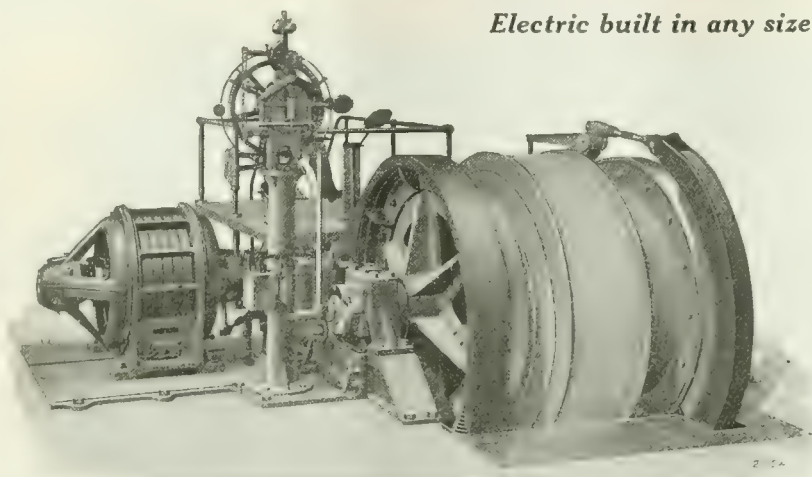
Branch Offices: - Allentown, Pa.; Birmingham, Ala.; Boston; Chicago; Des Moines, Ia.; Houghton, Mich.; Joplin, Mo.; Kansas City; Knoxville; McAlester, Okla.; Memphis; Nashville; New Orleans; New York; Philadelphia; Pittsburg, Kans.; Pittsburgh, Pa.; Pottsville, Pa.; St. Louis; Wilkes-Baire.



LIDGERWOOD MINE HOISTS

Electric built in any size

Steam up to 1,000 H.P.



DOUBLE CYLINDRO-CONICAL DRUM

We build mine hoists in types and sizes to meet every requirement of mine service.

ECONOMY IS THE KEYNOTE OF THE CONSTRUCTION OF LIDGERWOOD HOISTS.

The design, material and workmanship are the best obtainable.

The result is a smooth running, well-balanced hoist, with internal friction reduced to a minimum, giving the greatest rope pull for the power expended.

THIS IS TRUE ECONOMY

Lidgerwood Mfg. Co., 96 Liberty St., New York

Philadelphia Pittsburgh Chicago Cleveland Detroit Los Angeles Seattle London, England

New York Engineering Company

SPECIALISTS IN

*Gold and Tin Placer
Engineering and Equipment*

"EMPIRE"

Gold and Tin Dredges

"EMPIRE"

Prospecting Drills



PLACER

Mining Equipment

**SLUICES, RIFFLES, PIPE
LINES, GIANTS**

Our factory, located at tidewater at Yonkers, N. Y., is most favorably located for export shipments by water as well as for domestic shipments via New York Central lines, and is within easy access of the raw materials markets. Our manufacturing facilities, coupled with our experience in placer fields the world over, enables us to render a service that is a guarantee of satisfaction

WRITE FOR THE CATALOGS

Office
2 Rector St.
New York

NEW YORK ENGINEERING COMPANY

Works
Yonkers,
N. Y.



America's First Miners

When the mammoth and the mastodon grazed in the vast places of our early country, prehistoric men were busy pounding shiny fragments of native copper from their rock settings on the southern shores of Lake Superior.

These miners of the Stone Age first built fires to disintegrate the harder rocks, then they pounded out their treasures. Hammers of diorite or porphyry, shaped by the waters of the lake or by hand, occasionally grooved and fitted with a handle; wedges made of the very substance they were mining and tempered by the pounding that fashioned them; shovels of cedar that were used only as scrapers; bailers of bark or carved wood—these were the tools used in their open pit mines.

Now, whole mountains are removed to obtain copper; 47,000 tons of copper ore have been mined in a single day at one mine with the aid of Hercules Explosives. The principal problem of today is not the mining of the metals, it is the elimination of waste in their production.

We have for years recommended Hercules Special No. 1 on work for which it is suited because of its higher cartridge count and lower cost per cartridge in comparison with the dynamites in general use. No high explosive on the market is more economical.

For further details write to our Advertising Department, 934 King Street, Wilmington, Delaware, for our booklet "Volume vs. Weight"—A lesson in explosives economy.

HERCULES

POWDER

COMPANY



Allentown, Pa.
Birmingham, Ala.
Buffalo, N. Y.
Chattanooga, Tenn.

Chicago, Ill.
Denver, Colo.
Duluth, Minn.

Hazleton, Pa.
Huntington, W. Va.
Joplin, Mo.
Los Angeles, Cal.

Louisville, Ky.
New York City
Norristown, Pa.
Pittsburg, Kan.

Pittsburgh, Pa.
Pottsville, Pa.
St. Louis, Mo.

Salt Lake City, Utah
San Francisco, Cal.
Wilkesbarre, Pa.
Wilmington, Del.



FROM 50 to 150 perfectly finished rock drill steel bits can be sharpened in an hour by means of a "Leyner" No. 50 Sharpener.

ACCURACY, speed and durability are the notable features of "Leyner" Sharpeners.

IN ADDITION to the sharpeners, "Leyner" Oil Forges, "Leyner" Shank and Bit Punches, I-R Pedestal Grinders and Ingersoll-Rand Swedish Steel will increase your production.

IT WILL pay you to learn more about these products.

Request complete information.

Ingersoll-Rand

Ingersoll-Rand Company, 11 Broadway, New York

112-LDS

= COAL =

American industries are today almost wholly dependent upon the **Coal Mining Industry**. Perhaps there is no question before the American people which more vitally affects each individual than that of **Coal**.

As a war necessity Congress nationalized our **transportation** system. The result is a deficit that is appalling, and is one which means dollars in taxation to the people of the country.

There are a few who would nationalize our coal mines. These few are busy spreading their propaganda.

The great mass of American people is guided in its thinking by the genius who attracts their eyes with statements that are extravagant and founded on but half a truth.

They do not stop to analyze these facts:

- Coal is **the** essential in modern industrial life.
- Coal is **the** basic American industry.
- Coal is **the** basis of 1500 branches of industry.

National control necessarily means political control.

If the coal mines are nationalized the bolshevist element could completely demoralize these 1500 American industries, with their strike system, and the great unprotected public would be at the mercy of the few who are in power.

THE AMERICAN MINING CONGRESS

is alive to the great questions that are today facing coal operators. Are you familiar with its position upon this vital subject? Do you know what it is doing to help meet the situation?

Address: WASHINGTON HEADQUARTERS, Munsey Building, For Information



The severest test of Wire Rope is found in Logging Operations

The Clyde Iron Works recommend and equip their

CLYDE SKIDDERS

WITH

WILLIAMSPORT

PURPLE STRAND

The Toughest Wire Rope Made!

Clyde Iron Works adopted Williamsport Wire Rope only after the severest and most exhaustive tests of the various standard, wire ropes.

And, too, it was not "Special" Wire Ropes built for this test, but ropes bought in the open market without our knowledge.

For a great many years Williamsport has specialized on High Quality Ropes and an inspection of our plant and methods—to which Wire Rope Users are invited—will convince anyone absolutely that here is the Wire Rope you can't rust.

The Williamsport patented Telfax Tape Marker presents positive, definite, indestructible evidence of each grade and eliminates the possibility of substituting a different grade from what you buy.

The test of service will convince you of the amazing efficiency of Williamsport Wire Rope—and regardless of the rope you are now using, you owe yourself this test.

WRITE FOR OUR FACTORY PRICES

WILLIAMSPORT WIRE ROPE COMPANY

Main Office and Works
WILLIAMSPORT, PENNA.

General Sales Office
PEOPLE'S GAS BUILDING, CHICAGO

"ACCEPTED AS THE BEST"

American Zinc, Lead & Smelting Co.

Purchasers of

Zinc and Lead Ores

Address

1012 PIERCE BUILDING
ST. LOUIS, MO.

Exploration Department for the purchase of
Metal Mines and Metal Mining Companies

55 CONGRESS STREET

BOSTON, MASS.

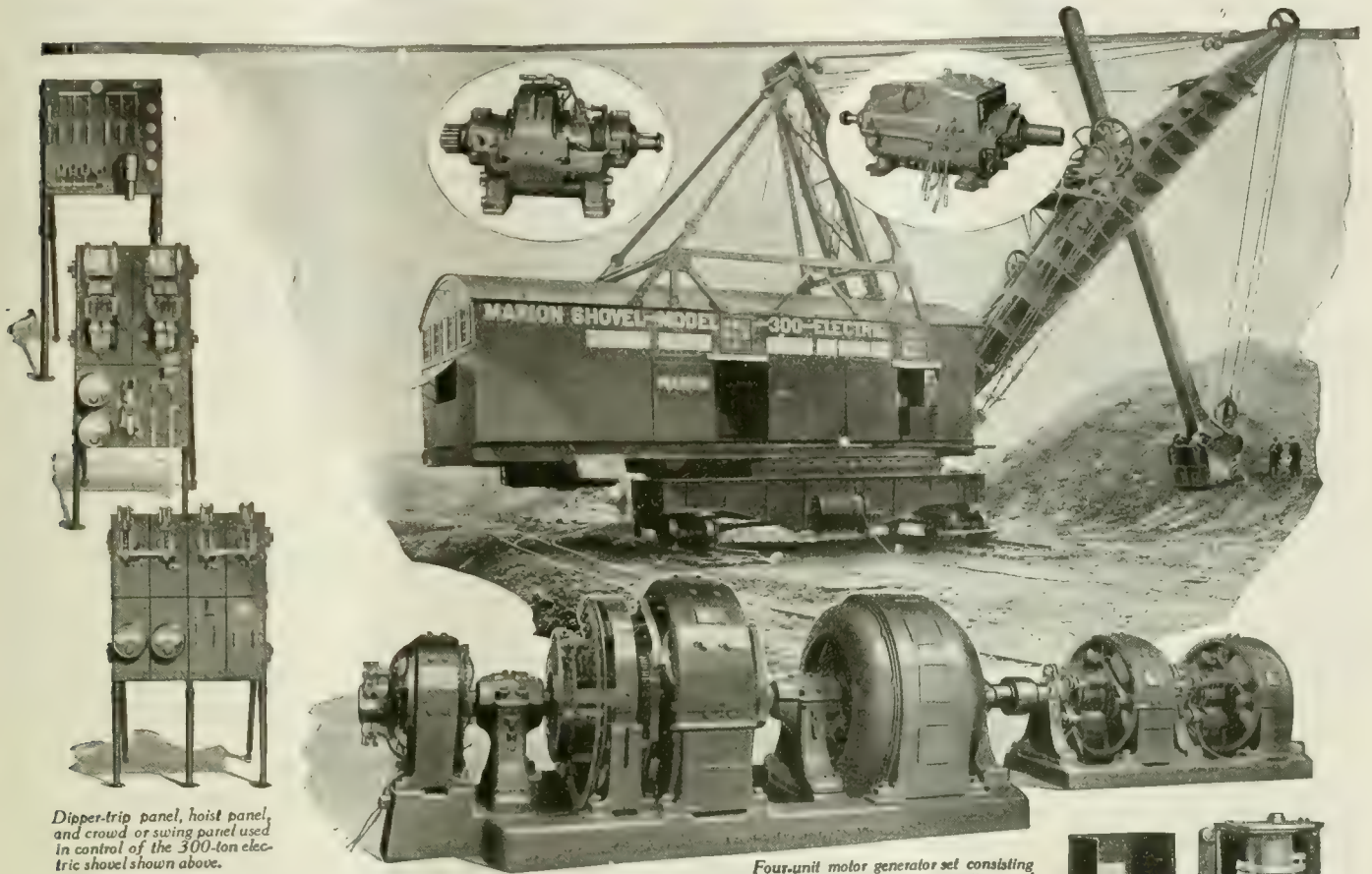
United Metals Selling Company

25 Broadway, New York

Electrolytic Copper	N E C & B M Brands
Best Selected Copper	A B S & M A Brands
Pig Lead— <small>Desilverised Common and Corroding</small>	International (I.L.R.Co.)
Electrolytic Zinc <small>Highest Grade and Purity</small>	Anaconda Electric

Selenium, Arsenic, Nickel Salts, Tellurium, Copper Sulphate

The increasing necessity for maximum efficiency in all mining operations requires that every available method for improvement be applied



Dipper-trip panel, hoist panel, and crowd or swing panel used in control of the 300-ton electric shovel shown above.

Four-unit motor generator set consisting of a synchronous motor, exciter, and three direct current generators.

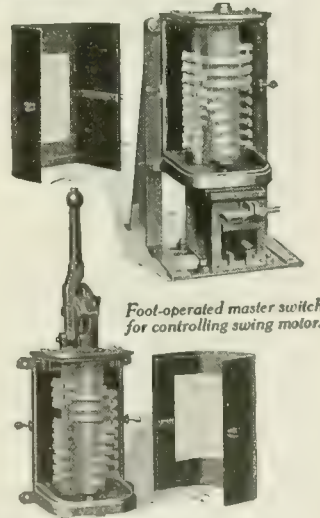
Bigger bites at less cost with the electric shovel

THE electric shovel has become an immense factor in mining and excavating. Coal veins too close to the surface for safe shafting, yet too deep for old-method open-cut mining are being stripped electrically with very profitable results. Open-cut limestone quarrying, once sluggish, now can keep pace with milling and loading. Bulk loading and big-scale digging can be done nearly twice as fast and at about half the old cost.

The 300-ton electric shovel, illustrated above, operates with greater power economy and fewer men—and cuts deeper over a wider radius than any predecessor.

All the electric equipment except the crowd motor on the boom, is located in the 50 x 22 foot cab. This equipment consists of one four-unit motor generator set with direct-connected exciter, two hoist motors geared to a common shaft, one swing, one crowd, and one dipper trip motor.

G-E engineers, experienced in design and manufacture of electric equipment for shovels, offer capable co-operation to manufacturers. Ask the nearest G-E office for further information.



Foot-operated master switch for controlling swing motor.

Hand-operated master switch for controlling the crowd or hoist motor.

General Electric Company
 General Office Schenectady, N.Y. Sales Offices in all large cities 43B-595



1
3

**35 EXTRA STICKS
AT NO EXTRA COST**

**more
per dollar**

A Guncotton-Nitroglycerin Dynamite Without a Headache

NITROGLYCERIN DYNAMITE has always been the standard high explosive. Until recently it has always had two defects, relatively unimportant in comparison with its basic advantages over other types of dynamite, but nevertheless marked disadvantages. First, it froze at a relatively high temperature, and second, it caused headaches.

Within the past year, the first of these disadvantages was removed through the production of a Du Pont Straight Dynamite which functions with normal efficiency at 10° below zero.

Both disadvantages have now been removed in Dumorite—a guncotton-nitroglycerin dynamite, which is not only absolutely non-freezing but is the first dynamite with nitroglycerin content which will not cause headaches.

Under ordinary conditions, Dumorite does approximately the same work as 40% dynamite stick for stick. And you can buy 135 to 140 sticks of Dumorite at the same price as 100 sticks of "40%."

Dumorite is saving money today for operators in most kinds of blasting work. If it is adapted to your work, your dynamite dollar will be worth \$1.35.

Write our nearest branch office outlining your requirements and put the problem of reducing your blasting costs up to our Service Department.

Branch Offices:

Birmingham, Ala.
Boston, Mass.
Buffalo, N. Y.
Chicago, Ill.
Denver, Colo.
Duluth, Minn.
Huntington, W. Va.
Kansas City, Mo.
New York, N. Y.
Pittsburgh, Pa.
Portland, Ore.
St. Louis, Mo.
San Francisco, Calif.
Scranton, Pa.
Seattle, Wash.
Spokane, Wash.
Springfield, Ill.

Du Pont Products Exhibit
Atlantic City, N. J.

E. I. du Pont de Nemours & Co., Inc.

Explosives Department
Wilmington, Delaware

NON-HEADACHE

DU PONT

NON-FREEZING

DUMORITE

The MINING CONGRESS JOURNAL

PUBLISHED EACH MONTH BY THE AMERICAN MINING CONGRESS, MUNSEY BLDG., WASHINGTON, D. C.

New York Office: 19 W. Forty-fourth St. Telephone: Murray Hill 0136
Chicago Office: 109 North Dearborn St. Telephone: Central 8744

Subscription Rate, per Year, \$3.00
Single Copies30

VOLUME 8

JULY, 1922

NUMBER 7

ORGANIZED LABOR ON TRIAL

THE PECULIARLY brutal outrages at Herrin, Illinois, furnish but another illustration of the criminal tendency of organized labor as it now functions. This tendency grows out of the theory that any man has a right to employment. The fact is that Gompers has no more right to demand employment of Gary, than Gary has a right to demand that Gompers furnish employment to him. When this truth is accepted, a better basis will have been established. No man has a right to a job except under contract, which means a mutual agreement between the parties interested. Industrial crimes follow closely upon the pernicious and illogical premise that "labor is not a commodity"; that labor cannot be bought and sold; because he who sells his service is not the subject of barter. A sale of the man himself would be slavery; the sale of his service is a legitimate business transaction. Service is bartered, sold or exchanged, either for the product of that labor in which the worker employs himself and disposes of his product when he may, or to another who pays money for the service and undertakes to dispose of the product so as to effect a return of his investment and a profit when possible. The hope of profit is the usual incentive for investment of the wages paid. In either case not the man, but the service which he sells is a commodity. The insidious propaganda that labor is not a commodity has a diabolically ulterior purpose which strikes at the root of government. That purpose is to make it possible for organized labor to create a labor trust through which it can control all employment.

If labor is not a commodity the anti-trust and conspiracy laws do not apply to its activities. It may, through the combined action of many, do things which two or more persons may not join in doing as to commodities without being guilty of conspiracy. In other words upon this theory the mob may do everything except commit crime without liability and may create conditions which make it impossible to convict the actual criminals, when the usual and almost inevitable wholesale slaughter and destruction of property follow.

Organized labor demands a result which can only be secured through crime; demands the acceptance of theories which make immune from the law all of the preliminary preparation for crime and by the very number

of those who take part in the criminal acts makes conviction impossible. First, organized labor by concerted action (conspiracy) orders a strike which cannot succeed except by preventing all others from doing the work which the strikers abandon.

Second, when others undertake to perform the work, they are called "scabs" and subjected to such indignities as are designed to prevent them from working, which indignities in the Herrin case did not stop when the men had been murdered. Third, in most cases the power of organized labor, its influence on juries, its threats of violence to the courts, prevents conviction for such crimes and, in such rare instances as a conviction is secured, a nation-wide propaganda is carried on to secure pardon, and to excite the sympathy of the public upon the ground that the conviction was "framed," and that the so-called victim is being "railroaded" to punishment to satisfy the powerful enemies of organized labor. The reader will recall the cases of Haywood, the McNamaras, Mooney, and many others.

These conditions are the rule in the conduct of strikes. Organized labor always attempts to justify itself by laying the blame on strike breakers and mine guards. And who are these strike breakers? Men who are trying to earn a living for themselves, and their families, as every citizen has a right to do, without which right, every citizen is a slave. And, who are these mine guards? Men employed to guard property against vandals who seek to burn or dynamite it; men who are exercising the privilege, which is guaranteed by the Constitution, of liberty to sell their service to those who desire to buy it upon terms mutually satisfactory. Think of the crimes directly caused by organized labor's determination to prevent non-union men from earning a livelihood! Think of the Coeur d'Alene trouble, of the Cripple Creek war, the Colorado coal strike, the Goldfield, Nevada, trouble, the structural steel workers' nation-wide destruction of property and life under the direction of the McNamaras, culminating in the dynamiting of the Times building in Los Angeles, the almost continuous West Virginia trouble, and lastly, Herrin, Illinois, the most ghastly of all. These are but few of the many illustrations, and as a culmination of hellishness in a camp which should be horror-stricken rather than jubilant is the crudely lettered sign, "Twenty-five scabs are dead; nine are in the hospital, and the mine is closed. The striking miners' prayers are answered." The striking miner's prayer that vengeance shall come upon anyone who takes "his job." Why *his* job? Because it was his until he struck to force a contract upon terms not satisfactory to and subversive of the rights of the other party. But in the holy name of organized labor all these crimes are to be justified.

COOPERATIVE BUSINESS ADMINISTRATION

HOW FAR the government should go in the regulation of business is a question that legislators have been endeavoring to solve for a quarter of a century. It is certain that economic and efficient operation of large business combinations, such as the railroads and the merchant marine, can never be secured under government ownership and management. Despite this fact, maximum results in the commercial development of the country will not obtain until large business interests are permitted to unite in order to eliminate waste in production and distribution, and this raises the question of whether or not government supervision is necessary. Inability of large commercial interests to unite the agencies of production, transportation and distribution without violating the anti-trust laws or the Federal Trade Act is largely responsible for the present high cost of living and high cost of everything else to the consumer.

The advantages of cooperative combinations both to the small producer and the consuming public are well illustrated by the success which has been achieved by such organizations as the various California fruit exchanges. These organizations, exempted from the binding provisions of the Sherman law, have been able to develop scientific and efficient methods for the effective distribution of the output of a great body of scattered producers, and their work has tended to lower costs. The success of these efforts, in fact, was the primary reason for the recent passage of the cooperative marketing bill making possible the same combinations for agricultural producers.

Under these circumstances, is it not reasonable to believe that a modification of the Sherman law as applied to industry would, under proper supervision, result in greater efficiency and lower costs in the production of many products? As the law stands, the only method by which necessary economies can be secured is through the actual merging of individual industrial concerns into great combinations of concentrated wealth. A proper modification of the Sherman law would make it possible to secure the benefit of cooperative combinations without the necessity of an outright sale of industrial properties. The provisions of the Sherman law, as they now stand, therefore, not only tend to prevent the application of modern and efficient methods to industry, but they actually defeat the aims of the law itself.

The elimination of waste and the introduction of economy through combinations of enterprises dependent upon each other, will insure conservation and promote the public interest. Therefore, the time is opportune for the government to take a forward step in cooperative business administration by providing an amendment to existing laws which will permit any consolidation of business enterprises in production, transportation and distribution when the public interest will be served thereby, such measure to be accomplished under proper supervision. The essence of such a plan would be the public interest. There is every reason why the government should function helpfully in matters of business and provide means to establish confidence between the government and business interests. The government would, under such a plan, intervene in the affairs of business only in a constructive way.

Probably the most important factors which enter into the cost of any commodity are those of transportation and distribution. The reason these elements of cost are so great is that these agencies are usually completely divorced. If an industry could go to the government with a bona fide proposal for the consolidation of all facilities for production, transportation and distribution

needed for the promotion of that industry and could show that such consolidation would facilitate production, prevent waste, reduce costs, eliminate duplication, and expedite delivery to the ultimate consumer, all of which would be in the public interest, government agencies should have the authority, after appropriate investigation, to allow such consolidation to be made.

In former years, production was accomplished in small volume at high unit cost, while distribution was relatively local and distribution costs relatively low. Today, we have a reversal of the situation of a quarter of a century ago with mass production at small cost and national distribution at high cost to the consumer. It seems highly probable that if Congress should amend existing laws so that consolidations could be made, whenever in the public interest, without violating the anti-trust laws, great economies could be effected both in production and in distribution. Improvement in productive and distributive processes with consequent reduction in costs to the consumer cannot occur as the result of legislation except in so far as legislation may help to set in motion economic forces to this end.

THE SHIP SUBSIDY

CONSIDERATIONS of an imperative nature prompted the House Committee on the Merchant Marine to recommend the passage of the bill providing for payment of a subsidy to promote and maintain the American Merchant Marine. The urgent need for a measure which will insure economic and defensive safety to the nation in time of peace as well as in time of war has never been more apparent than now. Truly it has been said that "a nation's merchant vessels are its peace-time commercial agents and its war-time naval auxiliaries." There can be no question raised concerning the need for a well-balanced national merchant marine. Development of our national resources and our commerce must continue, our naval strength must be kept secure, and the merchant marine is one of the most vital agencies necessary to these ends.

What plan offers greater possibilities for complete success than the subsidy? Certainly not government operation, for that plan has already proved an appalling source of extravagance in the expenditure of public funds. Certainly private operation cannot be successful in competition with the strong subsidized merchant marines of other countries, without government support. Certainly privately-owned vessels with limited capital cannot operate profitably if government operation, with unlimited capital, is continued, and the nation cannot afford to drive its privately-owned ships off the seas. Government operation lacks private initiative. Private operation insures increased efficiency. All of these considerations lead directly to the conclusion that private operation with government aid is desirable. The measure contains ample safeguards surrounding the use of public funds and provides for the return to the Treasury of compensation not needed by any vessel or where a vessel's profits are in excess of a certain percentage.

The nation cannot afford to permit its commerce to be carried in foreign-owned vessels. Past experience has proved conclusively that dependence upon foreign shipping to carry our products into the markets of the World results in our surplus production being stacked up along railroads and on wharves and docks, deteriorating and rotting, whenever the foreign producer desires to have first entry into those markets. We have no right to expect nor should we hope that foreign-owned vessels will at any time give efficient service and make prompt

deliveries of our freight to our customers abroad when the commerce of the nation whose flag they fly will thereby be in any way handicapped or restricted.

American ships flying the American flag should ply the sea lanes and engage in the carrying trade of the world in free competition with privately-owned vessels of other nations, unhandicapped by foreign subsidies, and ready for purposes of national defense in any emergency which may arise. The United States should never be permitted to lapse to the pre-war standard as a maritime nation. Never again should the nation be humiliated by the dictation of foreign governments as to what goods shall be carried, how, and when, at fabulous and excessive rates. Never again, as during the war, should our naval strength be jeopardized by the weakness of our merchant marine. The ship subsidy bill should be passed. The country should not be compelled to bear longer the burden of mistakes and folly of shortsighted policies.

MUSCLE SHOALS DEVELOPMENT

DEVELOPMENT of the water power at Muscle Shoals is an undertaking which the whole country desires to see successfully accomplished. Seldom has any matter pending before Congress received such wide publicity as has this proposition. This publicity has been inspired in part by the proposal made by Mr. Henry Ford to purchase the government's interests and lease the water power for a period of 100 years, and by persistent reports that he contemplates the manufacture of fertilizer for sale at low cost to the farmer. The terms and conditions of the proposal have not been subjected to rigid analysis by the public, and the country little understands what it is that Mr. Ford is offering to do, or what amount he proposes to pay for this plant that has been erected at enormous expense to the taxpayers.

The facts are thoroughly discussed in the majority and minority reports of the House Committee on Military Affairs on Muscle Shoals. We read these reports and we find that Mr. Ford will not agree to make fertilizers during the entire lease period unless he can make them with profit to himself. We find that under his proposal the plant is to be completed at government expense; that the total cost, when completed, will have been more than one hundred sixty-seven millions of dollars; and that for this great project, he proposes to pay approximately five millions of dollars—a nominal sum when compared with the amount expended by the government. We find that all repairs and rebuilding in excess of a specified amount must be undertaken by the government, regardless of how expensive they may be, throughout the 100-year lease period; and that if dams should break the government must pay any damage that arises in consequence of loss of life and property resulting therefrom. We find that the proposal involves a tax subsidy, possible litigation, and several other important features which thus far seem to have been given little publicity.

The MINING CONGRESS JOURNAL believes that this water power development should not be delayed, but questions the advisability of accepting the Ford offer, which would mean that Mr. Ford will be given rights and privileges that are to be denied to every other man or group of men in the United States, since all other lessees of water power privileges, under the Federal water power act, cannot obtain a lease for more than 50 years, and further are surrounded by governmental restrictions not contemplated in the Ford proposal. The Muscle Shoals plant should be completed, but it should not be completed for the especial benefit of a single individual. It should be leased, but it should be leased under the Federal water

power act. It should be made a powerful unit for the welfare of government in time of war as well as a valuable aid to the American people in time of peace, and no individual or group of individuals should be permitted to profit from its operation except under the same terms and conditions imposed by the water power act upon the lessees of other similar projects.

TAX WASTING

RIGID ECONOMIES in the handling of public funds by state and local governments must be effected without delay. Drastic cuts in public expenditures are vitally necessary to prosperity. Extravagant administrations should be denied the support of the electorate, and state and local revenue requirements should be placed on a sound financial basis which will strengthen public credit and not unduly burden industry.

It is recognized that many improvements are necessary in every locality in order to keep pace with modern civilization and growing populations, but such necessary improvements and betterments should be made at an opportune time when industrial and commercial prosperity will sustain the necessary tax levies, and not at a time when the tide of prosperity is at a low ebb. Even when necessary public improvements are undertaken, every economy consistent with sound business principles should be practiced. Waste and extravagance in launching new and costly projects constitute a real menace.

No public official or legislator should think in terms of provincialism or political expediency. Legislation should not be conceived in selfishness or fostered for political effect alone. The needs and rights of the whole community, state, or nation should be considered as paramount to sectional demands, and such measures enacted as may be justified by relative conditions. It is a fallacy to believe that local unrest or dissatisfaction can be allayed by discriminatory legislation. One locality cannot be favored at the expense of another with impunity. Such a state of affairs serves only to create bitter feeling and engender political strife which generally ends in tax wasting.

Drastic changes in legislative policies are necessary. State legislatures should scrutinize more closely proposed undertakings which call for large appropriations. No action on any measure should be taken hastily or without exhaustive study and thorough analyses of purposes to be served and results to be obtained. Business prosperity is on an upward trend as the result of improved general conditions. It is now up to state and local governments to furnish the necessary stimulus for prosperity by conserving public funds and by reducing local taxes.

Tax wasting can be eliminated by the abolishment of unnecessary administrative boards and commissions; by the consolidation of certain related administrative functions, which now are under separate departments or bureaus, under one administrative authority; by the correlation of services and agencies where duplications of effort occur; by the postponement of appropriations for certain improvements, betterments, and new projects which can be accomplished later at lower costs and at a time when the taxpayer is better able to pay the bill; and by exercising closer supervision over the handling of public funds in order to prevent unwise spending and graft. These are all matters in which many state and local governments have been woefully lax and careless.

THE CORONADO DECISION

UNDER the decision of the Supreme Court of the United States in the Coronado coal strike case, labor organizations are no longer immune from civil action for tortious acts committed during strikes. They are suable in the Federal courts. They are responsible for the acts of their members. They are amenable to law. Their funds are subject to execution in suits for damages growing out of unlawful acts perpetrated by their members in strikes. This, in substance, is the unanimous opinion of the Supreme Court.

The rant and wail that capitalism has at last found a way to kill the labor union movement in the United States will not find favor with a long suffering public. No one, except the unions themselves and their sympathizers, has the temerity to contend that such organizations should have rights, privileges and immunities which are not enjoyed by employers and others. In the past, wanton destruction of property, lawless interference with business, ruthless violence and incendiarism, carried on by union members during strikes, have imposed no liability upon the organizations conducting the strikes. No other class or group has had such freedom or such immunity. This freedom of action, enabling the unions to escape responsibility for vicious conspiracies and lawless acts, has led to conditions little short of anarchy.

The Coronado decision should be welcomed by the unions. It should benefit them by the effect it will have upon radical members who believe in direct action. It should create a respect for law and order heretofore non-existent among strikers who deliberately advocated violence because of belief that they were immune from collective civil responsibility.

If unionism, in order to flourish, must have the right to break laws without restraint, then unionism should have no place among American institutions. If, as stated by Samuel Gompers, president of the American Federation of Labor, the Coronado decision is the "worst blow" ever administered to organized labor in America, then it must be assumed that organized labor cannot prosper without infringement upon the law. But the view of Mr. Gompers is not justified by fact. The judgment of the court is a serious blow only to the illegitimate use of the strike, and simply makes organized labor's relationship to society just as responsible as it is privileged. Only unlawful acts are banned by the decree. Therefore, it is not a blow at unionism but wholly a matter of the protection of the rights of mankind; and public opinion should be unanimously in favor of the court, just as the unanimous opinion of the court is in favor of the public.

WHEN POWER GOES AMUCK

RIGHT is always Might: but Might is sometimes Wrong. Five thousand union miners and sympathizers, filled with the hot breath of hate, asserted Might the other day—asserted it against fifty defenseless workers—and drenched the ground with blood.

All because of hatred toward non-union men, who had not bowed before the "Temple of Labor" to the extent of taking out a life insurance policy signed by John L. Lewis before they went to work in the mine.

Responsibility for the Herrin massacre rests with the union officials who dictate the creeds by which union men are governed, using emotions as their strongest tools to hold their organization in line during times of labor disturbances. The following paragraph, culled from a press

report written several days after the massacre, places the responsibility with certainty:

"The fighting started after receipt of a telegram from John L. Lewis, president of the United Mine Workers of America, terming the men working at the mine as 'common strike-breakers.' Soon after, a truck carrying ten men to work in the mine was subjected to a barrage from striking miners near Carbondale."

The union leaders long have waved their hands and chanted and acclaimed the rights of the working man, declaring that these are what organized labor defends. Yet organized labor shed blood and wielded destruction in a savage attack upon a handful of working men whose rights were never considered for a moment by those who carried on the massacre. And the law of the land was tossed aside as quickly as the rights of the victims of the massacre.

It was easy for the mob to forget the law, for the miners rule Williamson County, where the massacre took place. There the law is in the hands largely of a group of former miners who have been elected to office by those who formed the mob.

Small wonder that there is little chance that any of those who committed murder, arson, robbery and dynamiting will ever be brought to justice for what they did during the massacre. Doubt that they will be made to account to the law for their actions is so prevalent that it has been openly expressed on the floor of the Senate.

Justification for this doubt is found in the verdict returned on June 26 by the coroner's jury, reflecting the position of the men who served as members of that jury, and giving strong indication of the manner in which the spirit of unionism has permeated that particular locality until it is so general that all else is accounted wrong. "We, the jury, find from the evidence that the deaths of decedents were due to acts direct and indirect of officials of the Southern Illinois Coal Company," say these men, who proceed to single out one non-union man as responsible for the death of a man who was attacking the mine, and then promptly forget to fix responsibility for the men who were killed at the mine when those who carried on the massacre attacked them. This incredible verdict has but a word concerning the miners who were shot, butchered, beaten and lynched by men possessed of a brutality that cannot be described in words. This incredible verdict is the result of an incredible bias, rising out of control of the local government by union influences, and which does not hesitate to brand a dead cripple "murderer," who probably acted in self-defense.

Since a massacre rose and blazed its bloody way in this controlled community, the public now believes that there may be scores of similarly controlled districts, where no control would be exercised were the fiery hatred that caused the Herrin massacre to flame up in another quarter. Surely where there is no check upon mass emotions, there practically is an invitation to disregard the law.

The massacre served to bring this and related conditions squarely before the public. The country at large now knows that union coal miners are convinced that there is no wrong in taking the lives of men who go to work in the places which they left when they went on strike. And the people are beginning to feel that the policies and aims of the United Mine Workers of America are based on unbridled Might rather than Right.

These things now are so deeply embedded in common knowledge that feeble attempts on the part of union officials to vindicate the actions of their mob, or to deny responsibility for those actions, are wasted efforts.

If the striking miners have at any time held any claim upon public sympathy, they forfeited such claim when

five thousand adherents of their law-disregarding creed yielded to criminal impulses and waged a massacre.

The public prizes its sympathy more than to squander it on men who are responsible for deeds such as are narrated in the following eye-witness report of the brutality with which members of the mob treated Mine Superintendent McDowell, the only man charged by the ultra-prejudiced coroner's jury as being a murderer:

"After the men were dead their bodies were kicked about until the neck was dislocated and they were otherwise mutilated in a manner that cannot be told. Especial attention was given Superintendent McDowell, who was a cripple with a wooden leg. One of the rioters had split open his head with a pick as he was staggering along the road, trying to obey orders to walk faster to the place of execution. He was holding his gapping forehead to staunch the flow of blood which was blinding him. One of his tormentors walked up and struck him a terrible blow under the ear with the butt of a heavy pistol and ordered him to walk faster.

"I know what is at the end of this journey," said McDowell. "I am making the best time I can."

"Well, we will end it for you right now," said his guard, as he stepped back a pace or two and emptied his automatic pistol into McDowell's abdomen. Later a group of miners passing that way found McDowell lying on his side as he had fallen. They turned him over on his back with their boots, and one of them took a cigar from McDowell's vest pocket and jammed it into the open mouth of the dead man."

CLOSER RELATIONS WITH INDUSTRY SOUGHT BY BUREAU OF MINES

EFFORTS are being made by the Bureau of Mines which have as their aim the increasing of efficiency of that organization's investigational work through closer cooperation with the mining industry. A letter has been addressed to the superintendents of all the bureau's stations asking their opinion concerning establishment of a number of advisory committees similar to those now aiding in the work of the Birmingham and St. Louis-Rolla stations, where representatives of the mining industry keep the bureau's experts well informed as to the needs of the industry and receive frequent reports of the progress being made by the various investigations in which they are vitally interested.

The committee working with the St. Louis-Rolla station has been functioning for almost a year, and all concerned are well pleased with the results which have been obtained under this system of cooperation. The Birmingham committee has been more recently organized, its first work dealing with the more general phases of the work of the southern station.

Personnel of a committee to cooperate with the Reno station now is being selected and the organization is expected soon to be completed and able to take up definite work in connection with the studies of rare and precious minerals being conducted at that station.

It is improbable that a committee will be appointed to work with the Fairbanks, Alaska, station, since the cooperative plan has been followed at that place for some time, with members of the Alaska Chapter of the American Mining Congress acting as a sort of communicating committee. John A. Davis, superintendent of the Fairbanks station, in outlining the situation to officials of the bureau in Washington, has made the suggestion that the board of directors of the Alaska Chapter be considered as a cooperative committee, stating that advice and sug-

ANNOUNCEMENT

The American Mining Congress announces in keeping with the preliminary announcement made in the May issue of the MINING CONGRESS JOURNAL that on and after July 1, 1922, no contracts for advertising space in either the regular or special issues of the MINING CONGRESS JOURNAL will be accepted upon the solicitation of H. G. or T. M. Winston or any of the members, individuals, agents or representatives of the firm of Winston, Inc., with main offices at 30 North Michigan Ave., Chicago, Illinois.

The American Mining Congress has adopted as its definite policy the development of direct relationships between the organization and the manufacturers of mine equipment and mine supplies, as well as direct relationships with all mining companies. This policy will result in greater service to its clients and makes possible larger cooperation along lines of mutual benefit.

gestions offered the bureau's experts by members of the chapter have proven of high value.

The following is the personnel of the Birmingham committee:

C. E. Abbott, Tennessee Coal, Iron and R. R. Co.; C. E. Browron, Gulf States Steel Co.; W. M. Lacey, Woodward Iron Co., Woodward; W. J. Penhallegon, Republic Iron and Steel Co.; J. E. Strong, The Alabama Co., and H. J. Thomas, Sloss-Sheffield Hteel & Iron Co., all of Birmingham, Ala.

EUROPEAN NATIONS MAKE DETERMINED EFFORTS TO REPLACE U. S. GASOLINE

DETERMINED EFFORTS on the part of European nations to free themselves from the necessity of importing gasoline from the United States have reached the point in France where an interministerial commission has been formed by the government and entrusted with the preparation of a program of action regarding the gas engine fuel supply in France, the countries under its protection and its colonies. According to word received by the Department of Commerce from Davis B. Levis, United States vice-consul at Bordeaux, a considerable part of this program is devoted to the possibilities of furnishing a substitute for gasoline through the utilization of the by-products of the great pine forests in the Bordeaux district.

Active development of researches regarding processes of distillation of wood is urged by the French government, it is said, in order that the residue may be used as a fuel substitute, the attention of chemists having been specially directed to the distillation of pine timber products because of the successful results obtained in plants established for this purpose in the United States and Germany.

"While the interest of the state in the development of gas engine fuel to replace gasoline is no doubt a part of its national defense plan as applied to airplanes, submarines, tanks and tractors," says the consular report, "commercial and agricultural fuel problems are fully considered owing to the limited coal production and absence of petroleum deposits in France."

A competition has been organized under semi official supervision, and large rewards are offered to inventors and producers of an economical and practical substitute for motor fuel.

SIMPLIFICATION OF ALASKA'S MINING RELATIONS WITH GOVERNMENT IS AIM OF NEW PLAN

RELATIONS of the mining industry of Alaska with the government will be greatly simplified through a consolidation of administration under a plan approved by Secretary Fall and placed in effect this month. Supervision of all activities carried on in the territory by the Bureau of Mines in the future will be vested in one official, who will receive and act upon reports which previously have had to journey to Washington for action. Benjamin D. Stewart, territorial mining inspector during the past three years, has been appointed to this supervisory position, and now is on his way to Alaska after having spent several weeks in familiarizing himself with the bureau's work and policies by inspections of several stations.

TO SUPERVISE LEASING OPERATIONS

Under the newly adopted plan, Mr. Stewart will be in charge of the bureau's station at Fairbanks, at the same time acting as Federal mining inspector and personal representative of the Secretary of the Interior in matters relating to operations under the leasing act.

Supervision of the leasing operations in Alaska soon will prove to be one of the heaviest tasks of the new office, in the view of officials. Increased activities in connection with coal mining naturally are to be expected since the Interior Department has entered into an intensive campaign to link private industry with development of the territory's deposits. Alaska's oil fields also are attracting an increasing amount of attention, and it is being predicted that the Katella field soon will be proven to hold only a small portion of the territory's reserves of oil. Officials now are referring to future developments as holding "tremendous possibilities," pointing especially to the favorable structures existing in the peninsular region.

Important factors in the government's determination of policy to be pursued in administration of its authority over the Alaskan coal deposits rest in the decision of the Lake and Export Coal Company, which is investigating possibilities of commercial development of this coal, and also in the outcome of the washery and steaming tests which are to determine whether the coal is of good enough quality to measure up to the standards demanded by the navy fuel experts.

ENGINEERS MAKE FIELD STUDIES

Engineers for the Lake and Export Company have been making detailed examinations of the fields for several weeks, and Director H. Foster Bain, of the Bureau of Mines, has been on the scene, keeping in close touch with developments. The company has until July 15 in which to give to the bureau its decision of whether it will undertake development work on a commercial scale. This decision will depend upon the reports submitted by its engineers. That some indication of decision in the matter already has been reached is seen in the fact that Director Bain has advised officials in Washington of his plans to leave Alaska soon after July 1 to return to the states. Originally, it is said, the director intended to remain in Alaska until later in the summer.

Washington officials not yet have been advised of the outcome of washery tests of 5,000 tons of Matanuska coal and 600 tons from the Bering River field, conducted at the Sutton washery during the past month. This coal later will be carried by collier to the Bremerton, Wash.,

navy yard, where it will be loaded into the bunkers of the *Texas* and the *New York*. It is in the furnaces of these two battleships that the coal will be subjected to the steaming tests which are expected to prove conclusively whether the coal is suitable for naval consumption. The amount of importance that is being attached to these tests is indicated in announcement that one of the bureau's most expert coal men will be assigned to observe them.

Mr. Stewart is a graduate of the Montana School of Mines. Following his graduation, he engaged in various mining activities in the United States until 1907, when he went to Alaska, entering upon a long career of mining engineering and mine management at various properties, later being appointed territorial mining inspector. His appointment is designated by officials as a fortunate one for the department because of his thorough intimacy with local affairs and his clear perception of just what is needed by the mining industry in Alaska. It is hoped that eventually the consolidation which now has taken place will be extended so as to include various territorial mining activities which may well be combined with the Federal authority, in the view of expert observers.

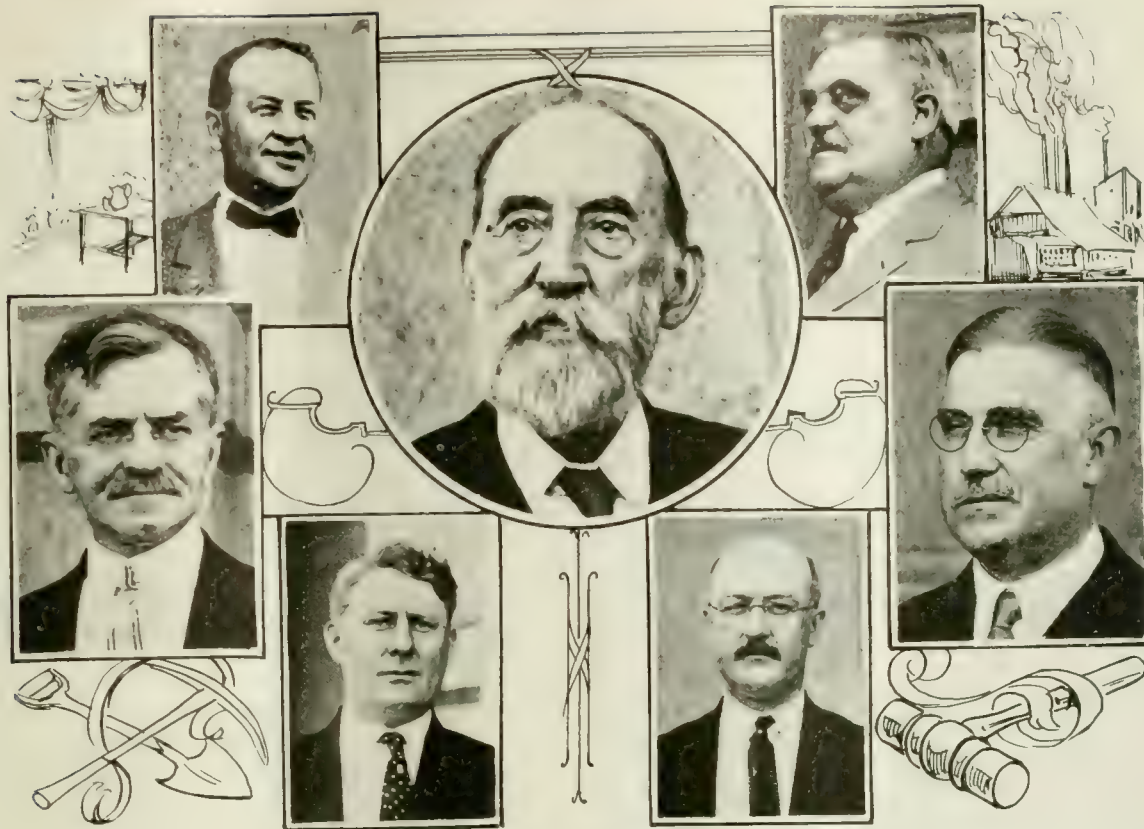
ROAD BUILDING PLANNED AS AID TO ALASKA'S DEVELOPMENTS

PROCEEDING upon the belief that the mineral developments during the next few years will center upon deposits in Alaska, the government is devoting much attention to the matter of road improvement in the territory and numerous recommendations have been made to Congress seeking to establish sufficient means of transportation to provide against any possibility of underdevelopment because of handicaps in the moving of supplies to and mineral products from mines in the districts which are to be developed.

It has been recommended that a narrow gauge railroad should be extended to accommodate the low grade mining sections that have been proven to exist in the vicinity of the Chateneeka River, the suggestion having been made that until such projects should show more tangible progress toward development only wagon roads should be considered.

An amount of cognizance is taken of frequent reports that appreciable bodies of ore are being uncovered in territory adjacent to the Yukon Range and the Circle, and recommendation is made that prospectors and miners should be encouraged by proper and economical means of communication.

The engineer of the government railroad recommended an appropriation for a road in the Kantishna country from a point where the railroad crosses Riley Creek near Mile 347. This road, if constructed, it is stated, would open up vast areas of apparently low grade ore whose products would find their way speedily by railroad to smelters. Investigations of the Geological Survey and Bureau of Mines indicate this is the most promising lode development north of Broadpass and tributary to the railroad. With access to the railroad and all year service by truck or horse, prices would drop to permit handling large bodies of low grade ores and to bring in milling machinery, in contrast with the short season which now handicaps operation. Other proposed improvements include the following roads: Wasilla to Willow Creek, Wasilla to Knik, Nancy to Rainy Pass, Talkeetna to Cache, Dumbar to Fort Gibbons.



NOTABLE FIGURES OF THE WESTERN MINING CONFERENCE

Center: L. Bradford Prince, former governor of New Mexico and first president of the American Mining Congress. The conference accorded him the distinction of a rising greeting. Right center: William J. Loring, president, American Mining Congress. Left center: James F. Callbreath, secretary, American Mining Congress. Upper left: Sidney Norman, editor, Northwest Mining Trust. Upper right: Halleck W. Seaman, director, American Mining Congress. Lower left: Daniel M. Kelly, Butte, Montana. Lower right: A. G. MacKenzie, Salt Lake City.

MINING CONFERENCE IS FEATURED BY STAND AGAINST GOVERNMENTAL PATERNALISM

By BURTON BUNCH

Western Secretary, American Mining Congress

A STAND against further interference with western initiative by governmental agencies in their increasing tendency toward paternalism was taken by the Western Mining Conference in Denver, Colo., June 20 and 21, and the conference provided a fighting force to make its position secure by the creation of a Western Division of the American Mining Congress. The spirit of protest against paternalism was evident in the action of the conference on the question of pending blue sky legislation, and the growing number of state and national bureaus, commissions and other tax-consuming agencies to restrict private business and personal liberties.

FORMS KEYNOTE OF MEETING

After the formal organization of the conference, which was held in the Colorado State Capitol, the keynote was expressed by Sidney Norman, of Spokane, Wash., editor of Mining Truth, who proposed that the hundred representative mining men in attendance be actuated in their consideration of all questions to be discussed by an aggressive spirit in opposition to continued governmental participation in business. Early in the session a resolution to this effect was unanimously adopted, as was a second resolution unqualifiedly opposing the enactment of the pending Denison blue sky bill, yet, at the same time, approving whatever legislation may be needed to safeguard the public against fraudulent promotions of all kinds.

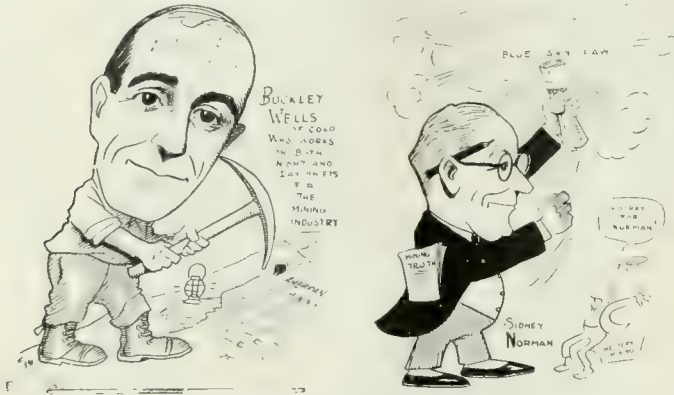
Condemnation of the principle which sets up an individual or a commission to pass upon investments, without appeal, in any so-called blue sky legislation, was responsible for the adoption of a resolution carrying with it a tentative draft of a Federal Securities Act, to be submitted to the Board of Directors of the American Mining Congress for consideration as a possible substitute to be offered to the national Congress in place of the Denison bill. The draft was prepared by the Legal Department of the Colorado Chapter.

Action by the conference on the mine law revision bill followed extended discussions in which it was apparent that no unanimous sentiment was possible of expression at this time, and the matter was, by resolution, referred to the newly created Western Division for further study and investigation, through means the new division soon will provide for closer cooperation among the mining men in the various western states.

The plan under which the Western Division will be perfected provides for the naming of a representative of the industry in each of thirteen western states to serve as a member of the Board of Governors, together with the secretary of each state organization as ex-officio members. In states where two or more organizations exist the selection of the board members is to be made by cooperative action, except that selection is to be made from among the personnel of the state chapter if one exists. When seven operating members and seven secretary mem-

bers have been designated from as many states, a chairman and a secretary are to be named at a special meeting, or by referendum.

Two meetings of the Western Division are to be held each year, one at the time of the annual meeting of the



national organization, and one in April of each year, at a place to be chosen by the Board of Governors. The mining organizations of the west have been asked to act upon this matter immediately, so that the division may be permitted to function at once. Its final organization will be brought about during the convention to be held in Cleveland in October. The states included in the Western Division are Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, North Dakota, South Dakota, Utah, Washington and Wyoming.

The future of gold and silver was discussed in able addresses by Bulkeley Wells, of Denver, on silver, and W. J. Loring, of San Francisco, on gold. An interesting paper on silver as a factor in the economic restoration of the world, representing the views of Judge George E. Turner, former Senator from Washington, was read by Sidney Norman, in the absence of Judge Turner, who found it impossible to be present.

SILVER STABILIZATION DISCUSSED

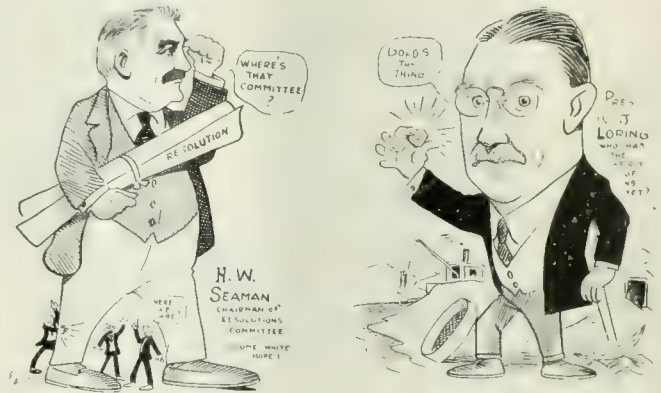
Growing out of this discussion the conference unanimously adopted a resolution urging Congress to consider the subject of international stabilization of silver at an early date. Mr. Wells suggested the possible organization of the silver producers of North and South America along a line similar to the Copper Export Association, into which the leading producers might enter.

The possibility of opening new gold fields was discounted by Mr. Loring, who said the future of gold depended on either such new discoveries, or on the redevelopment of old fields. He said unbounded optimism and enthusiasm on the part of the gold producer are essential.

Serious discussion of the desirability of a division of the American Mining Congress to consider the problems of transportation, was precipitated by H. W. Seaman, president of the Trojan Mining Company, of Deadwood, S. D., who related incidents of freight inequalities in his own experience. J. F. Callbreath, secretary of the American Mining Congress, told the conference it had long been his desire to create within the organization a Division of Transportation, because of the vital nature of the question, and because almost every other branch of business maintained such agency for study of its peculiar freight problems.

Copies of the conference resolution against paternalism were by unanimous action ordered sent to the governors of the various states in the western district and to the Senators and Representatives from each of

those states. Copies of the resolution condemning the Denison bill were ordered sent to the members of the Interstate Commerce Committee of the United States Senate, in which committee the bill is now held, after passing the House.



Mining men from virtually every western mining state took part in the conference. The session was opened by George E. Collins, governor of the Colorado Chapter, who declared that certain legislation now pending imperils the mining industry, and that the mining states of the west must speak as one voice in meeting the menace that exists. Mr. Collins introduced W. J. Loring, of San Francisco, president of the American Mining Congress, who presided throughout the meetings.

Organization was perfected by the naming of Jesse F. McDonald, Denver, former governor of Colorado; Sidney Norman, of Spokane, Wash., and Dan M. Kelly, Butte, Mont., of the Legal Department of the Anaconda Copper Company, as a committee on Rules and Order of Business, which committee limited chief discussions to 15 minutes and incidental discussions to 5 minutes, allotting to each state represented five votes.

The Resolutions Committee, on which much of the work of the conference fell, was selected by action of delegates from the separate states, and its personnel was as follows: Arizona, Percy Williams, Tucson; Colorado, Judge E. C. Stimson, Denver; New Mexico, Bradford L. Prince, Santa Fe; Utah, A. G. MacKenzie, Salt Lake City; California, Edwin Higgins, San Francisco; Washington, Sidney Norman, Spokane; South Dakota, H. W. Seaman, Deadwood; Nevada, Frederick Bradshaw, Tonopah; Montana, Wm. F. Ford, Helena; Idaho, L. E. Hanley Wallace, Wyoming, R. S. Ellison, Casper.

Many illuminating thoughts were expressed on the various subjects by men from the several districts of the west. These men included Sidney Norman, Spokane, Wash.; A. G. MacKenzie, Salt Lake City, Utah; Bradford L. Prince, Santa Fe, New Mexico; H. W. Seaman, Deadwood, S. D.; Bulkeley Wells, Denver; George E. Collins, Denver; Perry G. Harrison, Cripple Creek, Colo.; Chambers Kellar, Deadwood, S. D.; Clay Tallman, former Commissioner, United States Land Office, Denver; Paul Armitage, New York; Edward Payne, Clearcreek, Colo., and others.

BANQUET AT CLOSING

The conference closed with a banquet at the Albany Hotel on the evening of the twenty-first, with Bulkeley Wells as toastmaster. Speakers were Mr. Wells; H. W. Seaman, Deadwood, S. D.; D. W. Brunton, Denver; J. F. Callbreath, Washington, D. C.; W. J. Loring, San Francisco; Kuno Doerr, A. S. & R. Co., Colo.; Sidney Nor-

man, Spokane; Geo. E. Collins, Denver; Burton Bunch, Silver City, N. M.; A. G. MacKenzie, Salt Lake City; Wm. F. Word, Helena, Mont.; Edwin Higgins, San Francisco; Joseph H. Young, Denver, President of the Denver & Rio Grande Railroad Co.; Frederick Bradshaw, Tonopah, Nev.; and Robert J. Grant, Director of the Denver mint.

The secretaries and other representatives of state organizations were guests of the Colorado Chapter at a dinner at the Albany on Tuesday evening. At the dinner, problems of the secretaries and plans to be worked out in connection with the newly organized Western Division were discussed. Those in attendance were M. B. Tomblin, Secretary, Colorado Chapter, Denver; A. G. MacKenzie, Secretary, Utah Chapter, Salt Lake City; Edwin Higgins, president, California Metal and Mineral Producers' Association, San Francisco, Wm. F. Word, member, Montana Mining Association, Helena; Burton Bunch, Secretary, New Mexico Chapter and

Western Secretary, American Mining Congress, Silver City, N. M.; Sidney Norman, member Northwestern Mining Association, Spokane, Wash.; Henry M. Rives, Secretary, Nevada Mine Operators' Association, Reno, and J. F. Callbreath, Secretary, American Mining Congress.

AN OUTSTANDING SUCCESS

The success of the conference in considering every feature of the program laid down in advance was so outstanding as to cause comment among the hundred delegates, many of whom expressed a belief that the divisional meetings, such as this and such as will be encouraged by the activities of the Western Division, can be made most important to the mining men of the west. The meetings under the conference plan were the first to be held in just this way in the history of mining organization, and the important work accomplished justifies the prediction that other similar conferences will be equally successful in the future.

SIDELIGHTS OF THE CONFERENCE

Bradford L. Prince, of Santa Fe, New Mexico, one of the organizers of the American Mining Congress, was in attendance. A rising greeting was extended to the former New Mexico governor, who was asked, as a special honor to the conference, to sit beside the chairman during the first day's proceedings.

Another "old-timer" present was Judge Coleburn, who said a few things about high graders that were not complimentary. On the other hand, the Judge did say some splendid things about Secretary J. F. Callbreath, emphasizing the fact that the real date of the birth of the American Mining Congress was that day on which Mr. Callbreath's secretaryship was approved as a permanent proposition many years ago.

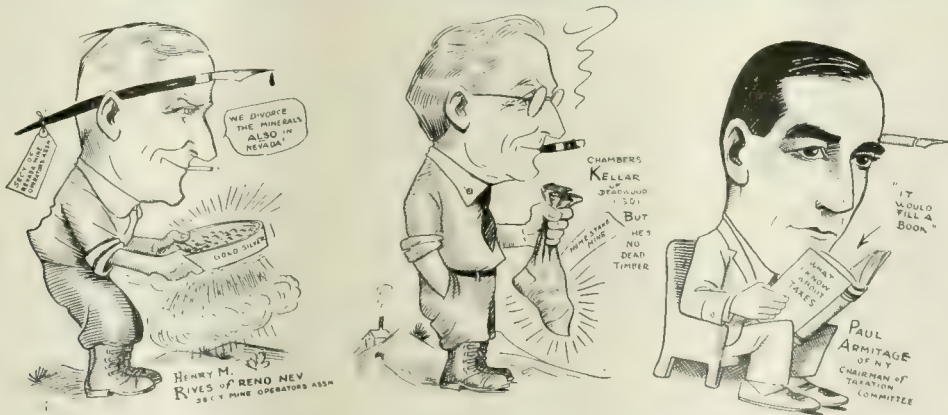
J. A. Ede, of LaSalle, Ill., beat Sidney Norman to the first expression in opposition to the government's participation in business, but Norman was present, and Ede had to telegraph his sentiments. His message was read to the conference by Mr. Callbreath early Tuesday. Mr. Ede said the government should "take its foot off the track, and clear the road of every impediment and obstruction." The grade is against us, he said further, and the east is anticipating an early demand for the resources of the west.

Secretary Callbreath did not let pass the opportunity, while the conference was waiting for the resolutions committee to report, to make some comment concerning the coming Silver Jubilee, the twenty-fifth meeting of the Congress in Cleveland, in October. The few words had a good effect, without doubt.

The conference, somehow, didn't get down to discussions of the Alaskan affairs, nor the relation of the government to western development, nor—two or three other things!

Efforts to have a photograph made of the delegates on the Capitol steps were like the repeated failures of the young man to make his supplies of tobacco and cigarette papers run out at the same time before he would quit smoking. When the photographers were ready the conference wasn't; when the conference was ready the photographers were busy elsewhere.

Lack of a picture, however, is not so keenly felt, since Doe. Bird Finch, well-known Denver cartoonist, was on the job.



C. S. Muffly, president of the Montana Mining Association, wrote from Helena he couldn't attend the meeting, but predicted in his letter that the session would "pass into history of mining as one greater than those heretofore held."

H. W. Seaman says the western division can serve as the neck of the funnel, through which sentiments of the west can be poured into the Washington office, and not "scattered." Unifying of individual positions can be accomplished now, he said.

LATEST MINING REVISION HEARINGS DEVELOP OPINIONS ON BOTH SIDES OF QUESTION

OPINIONS both doubting and asserting practicality of revision of the mining laws at this time have been bolstered by developments rising out of the recent hearings on the subject held by the House committee on mines and mining, which is considering pending legislation proposing such a revision.

A tenor of expression strongly favoring the proposed measure was injected into the hearings when Horace V. Winchell, a member of the Ingalls committee which drafted the measure, announced himself as its firm supporter. Suggesting only minor amendments, he was the first witness appearing before the committee who recommended passage of the bill in a form virtually the same as that which it now holds.

SECRETARY FALL'S OPINION

A cross element of sentiment held by the Secretary of the Interior became apparent during the same hearings, however, when a report made on the bill by Mr. Fall to Chairman Rhodes of the House committee was brought to light developing the fact that the Secretary deems it "inadvisable at this time to pass a law radically changing the general laws now in effect."

Stating that he finds that "the subject has been given publicity through the MINING CONGRESS JOURNAL and otherwise resulting in an expression for and against the measure," Secretary Fall declared that "if we were legislating for a new and undeveloped territory there are some features of the proposed bill, such as abolition of the so-called extra lateral right and recording of notices in the local land offices, which might be extremely desirable." He finds ground for opposition to enactment of this type of legislation at this time, however, in the fact that laws relating to the disposition of metalliferous minerals have been in effect for more than 50 years, during which time they have served as the basis upon which thousands of claims have been located. Rather than bring about general confusion by radical revision, Secretary Fall expresses an inclination to view gradual improvements or minor modifications suggested from time to time to cure existing defects as the more logical way of handling the situation.

OBJECT OF INTRODUCTION

"I notice," says Secretary Fall, "in the reported interview with, or communication from, the author of the bill, as published in the MINING CONGRESS JOURNAL of February, 1922, it is stated that the purpose is to give the propositions involved in the proposed legislation the widest publicity, and —

"It was not intended that the measure should be urged for Congressional action in its present form, but merely that time and efforts of the future might be saved by getting the bill whipped into shape before it began its course through legislative channels."

"If it is the intention of the committee at the present time to formulate a new system of mining laws, or to amend the laws as they exist, an indication of such purpose will, of course, bring the advice and counsel of this department to the assistance of your committee.

"It is sufficient now to call attention to the fact that with the exception of the placer claims for non-metalliferous minerals, the law with reference to placer locations is practically done away with by the provisions of the lease law of 1920.

"If it is the purpose, or if it is proposed to provide in

the future for the location of claims under what is known as the 'lateral lines' theory, rather than the 'apex' theory, then, with some modifications, the proposed provisions as to location, survey, etc., might be worked out.

"If, however, the Congress does not see fit to adopt the 'side line' theory, then such provisions as for the location of forty acres in quadrangle form, are not at all necessary and would not work out as well in practice as does the present provision with reference to the location of the maximum quantity of ground upon a lode or lead, to wit: fifteen hundred feet in length by six hundred feet in width, which is so well understood by all miners in the United States.

"I shall not undertake to discuss the bill further unless the Congress desires to press same for passage in some form at an early date.

"The writer has had many years' experience in prospecting for the location and development of metalliferous mines under U. S. laws in the southwest, and at the same time or during the same years, has had similar experience under the laws of Mexico where they operate under the 'side line' theory as distinguished from the 'apex' theory which obtains in this country.

OFFERS DEPARTMENT'S AID

"Should the committee think that the time has come to revise the mining laws of the U. S., I will not only give the matter my personal consideration, but bring into consultation the scientific experts of the Bureau of Geological Survey and Bureau of Mines, and at the same time will invite for consultation and assistance one or more of the best practical mining engineers and operators in the U. S.

"I understand that the proposed bill has been drawn after some investigation, and is the work of a committee of engineers. If this Department is requested to go into the matter fully, I would of course be glad to avail myself of the conclusions, and advice and reports of this committee."

Mr. Winchell centered his argument favoring the bill in the fact that the major portion of criticism against the measure is coming from the prospector, and that since "the day of the prospector in this country is practically over," the legislators should take into consideration existing conditions under which further development of mineral deposits in this country will be dependent upon low grade operations carried on by large capital, and upon "long chance" research work by skilled geologists who have come to supplant the prospector and his pack mule since practically all the more obvious deposits have been discovered.

Mr. Winchell declared that passage of the measure would bring about a stimulation of the "languishing" mining industry, emphasizing the fact that its future success will be dependent upon development of low grade ores rather than upon discovery of new deposits.

"WOULD STIMULATE MINING"

H. G. Moulton, a consulting engineer representing the American Mining and Metallurgical Society, declared that organization stood by policy endorsing Mr. Winchell's statement. He dwelt upon his possession of "the prospector's viewpoint" gained by long field experience and declared that if he felt that the proposed bill would offer serious handicap to the individual prospector, he could not feel at liberty to join in its advocacy.

ACCELERATED TARIFF ACTION BRINGS DECISION ON MINERAL ITEMS

THE various angles of justified consideration on every tariff item that comes up have necessitated a rather ponderous progress throughout the Senate.

There has been a marked tendency, not only on the part of the mining industry but on the part of all industries, to be impatient with the progress made on tariff legislation. These industries, dependent for resumption of business on protection, have felt, to paraphrase, that while the "mills of the gods grind fine they grind exceedingly slow."

In the last thirty days, however, a majority of the items in which the mining industry is interested have been reached and passed. In the main, the provisions made for justified protection of the mining industry have been satisfactory. The rates of duty now provided by the House and which have been passed by the Senate in the Committee of the Whole insure to the mining industry in its various branches the protection which it so self-evidently needs. In two instances this has meant the reversal of the Senate Finance Committee and in each case this reversal was made by a large majority.

Repudiation by the Senate of the proposal made by the finance committee to place manganese on the free list followed clear presentation by western Senators of facts upon which they based their arguments for a tariff upon manganese. These arguments featured one of the most interesting debates heard on the floor since the tariff bill was taken up, and resulted in the vote of 35 to 19. The House duties were thus restored, amounting to 1 cent per pound on the metallic content of manganese ore or concentrates in excess of 30 percent of metallic manganese.

By taking this action the Senate refused to give credence to statements by opponents of these rates who contended that domestic manganese reserves are not sufficient to meet the demands of the consuming steel interests. Several Senators from western states furnished evidence of conclusive nature in contradiction of this claim.

Senator Nicholson, Colorado, who offered the motion

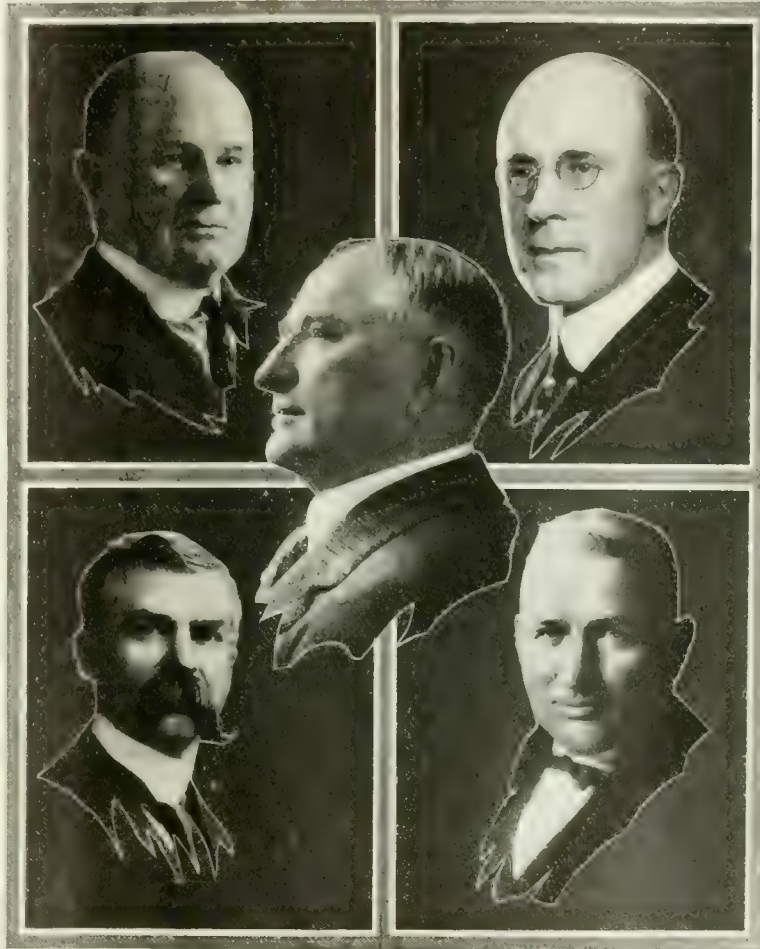
calling for rejection of the committee's recommendation, told the Senate there are over 400 districts in the United States capable of producing manganese ore, and that 1,100 deposits have been made subjects of reports by mine operators, engineers and geologists. He asserted that if tariff protection were furnished the manganese

mining industry, the entire requirements of the country could be met by domestic production. He quoted reports of an investigation made by the American Mining Congress showing high grade manganese ore reserves of 25,411,707 tons, and manganiferous iron ore reserves of 73,209,820 tons, in Alabama, Arizona, Arkansas, California, Colorado, Georgia, Minnesota, Montana, Nevada, New Mexico, Oregon, Tennessee, Utah, Virginia, and Washington. He also stated that there are known deposits in Maine, Mississippi, Maryland, New Jersey, Idaho, Oklahoma, South Dakota, Texas, Vermont, and Wyoming. Advocacy of the manganese tariff also was presented by the following senators: Walsh, Montana; Bursum, New Mexico; Kellogg, Minnesota; Oddie, Nevada, and Gooding, Idaho.

Another proposal by the Finance Committee affecting the mining industry was sent to the discard when the Senate placed cyanide on the free list, the

vote being 46 to 14. This action was achieved by adoption of an amendment offered by Senator Oddie, rejecting the committee's proposal that cyanide be placed under a 10 percent ad valorem duty.

The duty on ferromanganese was reduced from 2 1/5 cents to 1 7/8 cents per pound on the metallic manganese content. The duty on manganese, silicon, boron and ferromanganese and spiegeleisen containing not more than 1 percent of carbon was fixed at 1 7/8 cents per lb. on the manganese content and 15 percent ad valorem instead of 20 percent as originally recommended. The duty on molybdenum and concentrates was reduced from 75 to 35 cents per pound and the duty on ferromolybdenum from \$1 to \$.50 per pound. The cumulative duty on molybdenum in excess of 6-10 of 1 percent was reduced from \$1.25 to \$.65 per pound. The duty on ferro-silicon containing from 8 to 60 percent of silicon was



SENATORIAL CHAMPIONS OF THE MINING INDUSTRY IN THE TARIFF DEBATE

Center: Samuel D. Nicholson, Colorado. Upper left: Frank R. Gooding, Idaho. Upper right: T. L. Oddie, Nevada. Lower left: T. J. Walsh, Montana. Lower right: H. O. Bursum, New Mexico

fixed at two cents per pound and that containing between 60 and 80 percent of silicon at three cents per pound. The duty on ferro phosphorus and other ferros and alloys was reduced from 30 percent to 25 percent. The duty on cerium metals was fixed at \$2 per pound and that on ferro cerium and other cerium alloys at \$2 per pound and 25 percent ad valorem. The duty on cadmium was fixed at 15 cents per pound, on bismuth at 7½ ad valorem, and metallic arsenic six cents per pound.

APPEAL FOR GRAPHITE DUTY

Notwithstanding appeals by several western Senators the Senate refused to increase the graphite duties which were urged in behalf of American graphite producers. It adopted duties on graphite as follows: amorphous 10 percent., crystalline 20 percent and flake two cents per pound. Amendments by Senators Nicholson, Heflin, and Bursum, seeking to increase these duties were defeated by votes of two to one. Senator Nicholson gave notice that he would offer his amendments again before the bill is finally passed. These amendments propose duties of one cent per pound on amorphous, three cents per pound on crystalline and five cents per pound on flake.

The Senate also refused to increase the duty on quicksilver from 25 to 35 cents per pound notwithstanding urgent appeals by Senators Johnson and Shortridge of California. The 25 cent duty was adopted by vote of 30 to 25. The higher duty was urged in order to permit the quicksilver mining industry of California, Nevada, Oregon, Idaho and Texas to compete with foreign quicksilver, particularly that of Spain, it being pointed out that the 25 cent duty would not be sufficient.

An amendment by Senator King, Utah, proposing to reduce the duty on litharge from 2½ to 1½ cents a pound was defeated 21 to 47 and the 2½ cent duty adopted.

ACTION ON LEAD DUTIES

Senator Jones argued that there was no justification for any duty upon lead pigments, except the compensatory duty for the lead duty. His amendment reducing the duty on red lead from 2¾ to 1½ cents a pound was defeated, as was also an amendment reducing the white lead duty from 2½ to 1½ cents a pound, by a vote of 19 to 47.

On motion of Chairman McCumber the duty in paragraph 67, on chrome colors, was reduced from 30 to 25 percent ad valorem. The Senate rejected an amendment by Senator King reducing the duty to 20 percent, by a vote of 20 to 46.

The duty on iron oxide and iron hydroxide pigments was reduced from 25 to 20 percent ad valorem on motion of Chairman McCumber, and a motion to reduce it to 10 percent made by Senator Underwood, Alabama, was defeated 21 to 42.

Senator Moses, N. H., introduced an amendment proposing a duty of 2½ cents per pound on scrap or waste mica for grinding purposes.

After much debate the Senate adopted the rates on

zinc oxides and lithopone as recommended by the Finance Committee, notwithstanding opposition by Senator Jones, New Mexico, who sought to reduce the rates. The rates adopted were 1¾ cents per pound on zinc oxide and leaded zinc oxides containing not more than 25 percent of lead; ground or mixed oxides 2¼ cents per pound; lithopone, 1¾ cents per pound. Senator Jones opposed the duties on the ground that American smelters can smelt these ores as cheap as any other smelters and that duties in excess of the compensatory duty on the zinc content of the ore would be a gift to the smelting interests. Senator Smoot said there was only a differential of ⅓ cents per pound as compared with 5 percent under the existing law. American smelters are at a disadvantage as compared with European smelters as to the ore at the works but not as to the lead. Amendments by Senator Jones to reduce the zinc oxide duties to 1½ cents per pound were defeated.

The committee rate of 2 cents per lb. on antimony as regulus or metal was adopted after objection by Senator Jones, who said that while the antimony industry, including oxide, deserves more attention than it has been receiving, this country cannot build up the industry of smelting the ores.

The Senate adopted the duties recommended by the committee on lime, limestone, plaster, rock or gypsum, pumice stone, and bauxite. The duty of \$3.25 per ton on fullers earth was adopted.

MICA DUTIES ADOPTED

The mica duties were adopted notwithstanding efforts of Senator Walsh, Montana, to reduce the rates on the manufactured products. Increased rates on manufactured mica were defended by Senator McCumber, in charge of the bill, on the ground that they were necessary to meet the added cost of labor. Amendments proposed by Senator Walsh reducing from 40 to 30 percent the duty on manufactures of mica and from 20 to 15 percent the duties on ground mica were defeated.

Talc duties were adopted notwithstanding opposition by Senator Myers. His amendments to reduce the duties from 35 to 20 percent and from 45 to 30 percent on various grades of the product were defeated, and the committee amendment adopted by a vote of 38 to 15.

NAVAL FUEL APPROPRIATIONS

NAVAL fuel appropriations for the new fiscal year, embodied in the naval bill recently passed by the Senate, reach a total of \$16,000,000. This is far below the request for \$19,894,662 made by the Navy Department. Secretary Denby had expressed the hope that the fuel appropriations might be brought up to \$22,000,000.

Reduction of the unit price of fuel oil by 80 cents per barrel, and savings of between \$4,000,000 and \$5,000,000 annually in fuel oil expenses in the Navy are the hopes of naval officers who are conducting experiments seeking to achieve practical use of dense fuel oil. Results from these experiments are expected to take tangible form within a few months, the appropriations committee was told.

The navy also has made definite progress in establishing standards for lubricating oils, which, it is stated, have cut the price of these oils from \$1 to 36 cents per gallon. The Senators were told that these specifications for lubricants are now being used by the Shipping Board, and have avoided the waste of several millions of dollars. Savings in lubricating oils and steel by the Navy are claimed to reach \$1,000,000 annually.

STANDARDIZATION OF MINING TIMBERS

By GERALD SHERMAN*

STANDARDIZATION in the use of timber is different from that of other materials of construction. One steel shape can be made from a mass of metal as easily as another but it requires special rolls to make it. The variety in sizes must, therefore, be reduced to reasonable limits, not because of the raw material but to save plant investment.

In timber we have logs of unchangeable shape from which to carve out whatever sizes we may wish to use, and it makes little difference in the main what rectangular shapes are desired. The cost is approximately the same for the same cross sectional area. The skill of the sawyer consists in his ability to cut out a variety of shapes from a given log with the least possible waste. Economy in manufacturing timber, therefore, is increased by using a larger number of standard sections.

In its use mining timber also differs from other materials in that it reaches the mine unassembled, and is put together on the spot. Standardization, therefore, is more difficult and of less advantage.

If round timbers are to be used, the situation is still more difficult. Their great variation is in diameter, and since most mines need timber of roughly the same dimensions, there is apt to be a much heavier demand for certain diameters, and an actual loss in the very large and very small sections.

There does not appear to be any great advantage in attempting to standardize, therefore, for all mining work. The large mines own and operate machinery for framing timber according to their needs, and such machines have convenient adjustments so that they can cut any pattern of framing desired, and with equal ease.

This is also true of framing plants owned by timber merchants, but they would be more used by the small mines if they were to agree upon one or two patterns of framing, of which the merits would probably be nearly equal. The timber merchants could probably work up a business profitable to them and to the smaller mines if they pushed the matter. Framing by hand is naturally expensive, and many small mines cannot afford framing machines.

This advantage would appear particularly in the framing of shaft timbers. The framing cuts should be so simplified that it could be done by machinery, and by using standard sections for compartments, the further standardization of shaft equipment, cages, skips, etc., would be promoted.

Framing at the source will save some freight and waste for small properties, but this saving will not be of much importance at mines using large quantities of timber.

There is every reason to standardize in timber framing

for an individual mine or group of mines. A joint framing plant could be erected, in which timber would be framed and sent to any property in the district needing it. Even a single property, however, may properly need a good many sizes, and while the principle of framing is the same, there may be a difference in proportions due to size. This, by the way, may be largely avoided, if desirable, in square set framing by using the stepped framing of the Butte District. If the ground differs in hardness or other characteristics it will require different strengths of timber. Drift timbers might range from eight by eights to twelve by twelves, and if power haulage is used, it would be necessary to have two sizes of drifts.

Restriction in sizes, in this case, would mean a waste of timber, as the next largest size would have to be selected for the necessary strength.

The general design of timber structures may be standardized, but the principal objects should be simplicity of design and for ease in erection. This would appear particularly in ore chutes and manways. In manways the question is principally a matter of safety, while in chutes it is a matter of durability, and ease in loading from them.

There is probably a wider divergence in the use of ties for tracks than in any other. Very little is accurately known of the bearing power of ground to support ties, but there should be a relation between the space of the ties and the weight of the load on the rail. If ties are spaced too closely, there will not be sufficient ballasting material to hold them in place. Stiffening the rail section will spread the weight of the load over a greater number of ties, and

braces may be used on curves if the spikes loosen.

There has been recently an active development in the use of Gunite to avoid the use of timbers. It seems to be successful in many cases, and is worthy of great attention. Ground which slacks on exposure to the air can be held in place with a light coat and in some cases heavier ground can be held more cheaply with Gunite than with timber. The use of Gunite is quite new and its principles are not yet thoroughly understood, but its advantages are so great in economy and for fire-proofing that its use will be greatly increased in the next few years.

Economy in the use of timber depends very largely in avoiding its use by selecting a method of mining which requires little of it. Further economies can be made by preserving it so that it will not have to be replaced before it can be abandoned. In many places its necessity is only temporary, but in shafts, chutes and permanent drifts, it often fails by decay rather than by crushing.

The use of timber preservatives in metal mines has not



GERALD SHERMAN

*Consulting Engineer, Phelps Dodge Corporation, Douglas, Ariz.; Chairman, Mine Timbers Section, Standardization Committee, Standardization Division, American Mining Congress.

gone very far. A thorough treatment is costly, and there are not many places available for convenient treatment, which should be done after the timber is framed. There are a number of different liquids used for timber preservation. Creosote or some more or less similar oil product is used in the largest number of cases. It is suspected of increasing the fire risk, but the matter is still in dispute and it is probable that the inflammability is soon reduced by the rapid evaporation of the most volatile constituents.

A less thorough treatment by painting or dipping which can be done at the mine offers some advantages. It is not so expensive, but may still add appreciably to the life of the timber, and may in fact yield greater economy.

Beyond these generalities it is difficult to go. It will be desirable to encourage the more general use of framing plants at the source for the benefit of small mines. The use of rational designs in framing of all kinds should be encouraged, although they need not necessarily be the same for all districts. Although the benefits arising from timber preservation are acknowledged in principle, very little reliable information is available on its value in any particular district. Elaborate tables have been published showing the point at which timber treatment will pay, but as they are based on the comparative life of treated and untreated timber, few mines can use them for lack of exact knowledge of the life of untreated timber and the increased life which various treatments will give. Observations, tests and records should be made in all districts so that it can be known, as soon as possible, where the advantage of treatment lies.

CONSTRUCTIVE COMMENT

ON

STANDARDIZATION IN THE MINING INDUSTRY

A dearth of specific information exists concerning the value of various methods of mine timber preservation, due mainly to the length of time which must elapse before practical demonstration of ability of the preservative agents to offer protection against decay can be obtained. Valuable information on the subject is included in a recent exchange of correspondence between George E. Collins, governor, Colorado Chapter, American Mining Congress, and Gerald Sherman, consulting engineer of the Phelps Dodge Corporation and author of the foregoing article.

OBSERVATIONS OF LONG EXPERIENCE

Mr. Collins' letter follows:

I have just been looking over the second Standardization Bulletin of the American Mining Congress, in which you refer to the importance of timber preservation. The only data on this subject in the Bulletin is the paper by R. R. Hornor and G. M. Hunt, which does not seem to me to carry our knowledge beyond the point where we were twenty years ago.

At the Newhouse Tunnel, Idaho Springs, Colo., where the life of timbers had been short and the cost of replacements heavy, I made experiments in the period, 1907-1909, with the use of timbers treated by the hot and cold open-tank method with carbolineum and coal-tar creosote, and also of steel sets dipped in preservative paint.

A record was kept of the sets treated, with cost of treatment, etc. Early in 1909 I resigned the management of the Tunnel Company and acted as consulting engineer for about eighteen months, since when I have had no connection with it. On a recent visit I was told that there was no longer any record of the treated timbers, and that none had been treated since I left. I however, recollected their position in some cases, and observed that these were still in good condition. From my recollection of the life of untreated timbers, I

should judge that treated sets had lasted at least twice, probably more than three times as long.

Before I left the tunnel I had heard of some men making complaint of the odor of the creosote, which in unventilated drifts was quite strong. I had supposed the creosote to be harmless. Several years later, however, I read in the newspapers of a case of a man who had worked in the tunnel suffering from what one doctor attributed to creosote poisoning. I understand this man died; but from what I heard at the time it seemed very doubtful whether the cause alleged was true. I think that the question of possible poisoning resulting from the use or handling of creosote timbers should be investigated, before we go much further with it. I have never tried treatment with zinc chloride, because I supposed it would be too likely to dissolve out.

The fire hazard of creosoted timbers must, it seems to me, be greater than that of untreated timbers, although the companies which sell carbolineum deny it. In a considerable proportion of vein-mines, however, the increased inflammability is no serious objection, because (excepting in a few places where guniting can be used) the timbers are constantly exposed to dripping water or in contact with damp rock, and cannot burn.

URGES IMMEDIATE ACTION

The following is Mr. Sherman's discussion of the points developed by Mr. Collins, to whom it is addressed:

Your letter of April 11, addressed to Mr. Gerald Sherman, concerning the article by Mr. Hornor and myself, which was printed in the second Standardization Bulletin of the American Mining Congress has been referred to me for comment, and I am very glad of the opportunity to discuss this matter with you.

Mr. Hornor and I had prepared a comprehensive article on mine timber preservation to be presented to the mine timber committee last October but we found it would be impossible for the Mining Congress to publish such a long article. We, therefore, made a very brief abstract of it, and this is the article published in the Standardization Bulletin. I am enclosing for your information a manuscript copy of the complete article. You will note that it gives considerable detailed information about preservatives and processes and their effectiveness.

The experience you had with creosoted timbers at the Newhouse Tunnel is in agreement with the results of many other experiments which have been made. Taken all together these experiments establish conclusively the fact that preservative treatment effectively prolongs the life of timber, and we have now come to the point where we do not need further experiments as much as we need to apply the knowledge already secured.

Experiments should be continued, of course, in order to find better preservatives and processes, but it is not necessary for mining companies to go to the expense of conducting these experiments and waiting years for the results. What we want them to do is to choose, from the various preservatives and processes now available, the one which is most suitable for their use and then use it as extensively and continuously as possible. In this way the savings of money and timber and labor can begin immediately instead of waiting for 20 years more.

You will note that we do not recommend either creosote or zinc chloride as being the best under all conditions. Excellent results may be obtained with either. The creosote is more permanent in its effect but is sometimes objected to on account of color, odor, or possible fire hazard. While we do not consider either of these very serious objections as a rule, there may be cases where they become of considerable importance. When they do, the mine operator can turn to zinc chloride and avoid these objections. Zinc chloride is cheaper than creosote and cleaner but not quite so permanent.

I doubt very much if the man you refer to was poisoned by creosote. If he was, it is the first case I have heard of where creosote fumes seriously injured anyone. I have worked around tanks of hot creosote for weeks at a time in the field and our laboratory is frequently filled with creosote fumes of much greater concentration than one can get in a mine drift from creosoted timbers. There are hundreds of men throughout the country working at creosote plants and handling treated timber for their living. The odor is undoubtedly unpleasant to some men, but not dangerous. It may cause labor troubles and thus be legitimately objected to but illness of any consequence is not to be expected.

There is some evidence from fires which have occurred in creosoted structures which indicates greater inflammability than in untreated wood. Conflicting evidence, however, does not permit any conclusive statement on the subject.

COAL INVESTIGATION SEEN AS ELEMENT IN PLAN FOR "PERMANENT SETTLEMENT"

By IRA L. SMITH

THE GOVERNMENT has decided to make an investigation of the coal industry with a view to securing information intended to serve as a basis for a "permanent settlement" of the industry's labor troubles. High officials of the administration declare present knowledge of details of the coal industry's operation is an insufficient foundation for intelligent and enduring effort toward ironing out complexities which are sapping the life of the industry.

"COAL INVESTIGATION"

Such an investigation probably will be inspired by executive order, since it scarcely will be deemed practical to wait upon Congress to pass legislation on the subject, say those who are acquainted with official views. It is added that the work will be entirely apart from the survey of the coal industry to be made by the standing organization of the unemployment conference after the strike has been settled.

No comment has been heard regarding the authority of the President to order such an investigation.

Prior to the conference held by President Harding with representatives of the operators and union miners, it was evident that the government would use the prophesy of a gloomy future for union production as a means of inducing cooperation in its plans and, more immediately, a compromise of conflicting demands concerning the scope of conferences on wage agreements.

Bankruptcy within four years was prophesied for both operators and miners engaged in union coal production if conditions are not radically changed. A high authority declared that non-union mines will so increase their production within that length of time by undercutting union coal prices that the union mines will be forced to close down, with the non-union properties able to supply the full needs of the country.

AWAKE TO SITUATION

The operators have been wide awake to the effect upon them of this situation in the marketing of coal; hence, this rather startling statement by a leading government official can goad them into little further action. Union leaders, however, appear to have been blind to the fact that their own policy has been eating the ground out from beneath them, and they accordingly will have to take the longest steps toward evading fate.

These steps can take no other immediate direction than toward a compromise which will in a measure agree to the district wage agreements against which the union has been making a determined stand.

Once the dispute over territory to be covered in wage agreements is ended, the basis for a temporary settlement will be laid. This temporary settlement, relieving the present situation and renewing general production of coal, will serve as a scaffolding for the construction of a permanent settlement. With the immediate trouble disposed of, the administration will center its attention upon the investigation.

Guided by the information obtained from this procedure, the government hopes to enter into the succeeding phases of its plans, which very likely will involve enactment of new legislation. Although these plans have been kept well under cover during their present state of premeditation, it is admitted that they hold something

entirely new for the industry and thus it is highly probable that the agency which must be created for their administration will be brought into being by legislation.

Secretary Hoover's position, as a guiding spirit of the administration in dealing with the coal situation, makes it of interest to note that this entire outline of action fits in most admirably with his favorite method of giving an impetus to plans in which the public is directly concerned on a large scale. He always has showed a marked liking for the system under which a plan is developed behind the scenes, then placed in the hands of a conference or committee to receive the approbation that will give a firm footing upon which to make further progress.

DEADLOCKED SITUATION APPEARS

Following the conference held June 26 between President Harding, Secretary of Labor Davis and John L. Lewis, president of the United Mine Workers of America, it became apparent that the strike situation was tightly deadlocked, with both the operators and miners firmly entrenched in their demands concerning the nature of wage conferences. The administration, it seems, had felt that the logical time had arrived in which to make another valiant effort to bring the two elements together, the probability being that the Herrin massacre and other recent developments were thought to have centered public attention upon the strike sufficiently to create an added desire for tentative plans for negotiation.

The President, however, found Mr. Lewis no more inclined to enter into district conferences than before. In view of this situation, there seems no other alternative for the government to pursue than to devote its attention to development of a Hoover plan.

Turning to the present, close observers are openly declaring that Congress would have initiated and pushed coal legislation during the past month had it not been that Secretary Hoover's plan for holding down the prices of coal proved so successful, once its critics refrained from their attacks.

Given a chance to prove itself, Secretary Hoover's plan proceeded to hold prices at a stationary level, regardless of the fact that the strike was in its tenth week when the senatorial attack was called off to see of what stuff the Secretary's idea was made. With bituminous coal prices scaling between \$2.90 and \$3.10 during the third week of last month, no amount of demagogic ranting could have justified any finding of fault with the situation or charges that high profits were being made.

DEMONSTRATION OF PRACTICALITY

It was not until a certain element had been quieted, however, that the remarkable manner in which the Hoover arrangement could work was demonstrated. Scarcely had the plan been formulated when echoes came wafting down from Capitol Hill, bearing the charges that coal prices had been "boosted" by 100 percent as a result of the "individual agreement" which Secretary Hoover established with each operator. Difficulty is found in efforts attempting to discover the motive and inspiration for this criticism which came near to undoing a system which stands at the present moment as an ideal protector of the coal industry against public criticism. Several stories are in circulation as to how Senators Borah, Idaho, and Walsh, Massachusetts, who led the

attack on the floor, initiated or were led to initiate their program. The retailers deny that they went to the Senators and complained against the plan. Some tell a story of being threatened with a subpoena if "they didn't tell what was going on." The most logical theory of origination of the flare is that which points to a certain element of the retailers as the spot where the turbulence of a few days began, later bringing the entire retail dealers' organization into the light of antagonism to Secretary Hoover's plan.

Regardless of how the verbal melee and shower of pungent correspondence began, the plan soon was supported by thorough cooperation on the part of all branches of the coal industry, the retailers' stand being shown by circulars sent to all members of their organization in which the agreement with Secretary Hoover is outlined in detail.

In clinching the retailers in the position which he desired them to occupy during the present emergency, Secretary Hoover continued to exhibit the keen ability which he has shown in handling the situation since first he deemed it advisable to take open action in connection with coal prices. After the retailers apparently had broken bounds following their agreement to cooperate with the Secretary in his "moral obligation" system, he simply brought their representatives together in his office with those of the operators, who were somewhat in the position of "having the buck passed to them." A quiet conference ensued and ideal results were obtained, judging by the economic calm which settled immediately.

The operators of western Kentucky were the only ones remaining "outside the fold" when the plan finally got under way, and reports reaching Secretary Hoover after the twentieth of last month indicated that these operators were receiving from \$4.25 to \$5 a ton for their coal, while the \$3.50 maximum was considerably above the country-wide level, illustrating the cooperation of bituminous operators of the country with the Secretary. Discussing the position of the western Kentucky operators, a high government official recently said:

"It is a good thing for the situation in general that some few operators have failed to take part in the agreement which the vast body of producers so commendably has adopted. Their action gives the country at large a chance to see an inkling of what might have happened to coal prices had not the Secretary taken the action he did."

REFINERS TO AID COMPILATION OF OIL INVESTIGATION DATA

DETERMINATION IS FEATURING Senator La Follette's efforts to send the investigation of the petroleum industry, recently approved by the Senate, delving deeply into matters relating to the stocks and prices of crude oil, gasoline and other related products. The services of an attorney have been retained by the Senate Committee on Manufactures, which is to make the investigation provided for in Senator La Follette's resolution, and it has been intimated that no stone will be left unturned by that body in its efforts to gain all possible information.

ASKS FALL FOR DATA

One of the first moves taken following adoption of the resolution came in the request made by Senator La Follette, as chairman of the committee, of Secretary Fall, asking that the Interior Department assist the investigation by submitting such statistics as it possesses bearing on the subject.

These statistics have been given to the Interior De-

partment by the producers and refiners with the understanding that they were to be made public as totals only and that the returns from the various companies were to be considered as confidential. Wishing to hold these confidences inviolate, and still desiring to comply with the Senate committee's request for information, the Interior Department has been placed in a unique situation.

SEEKS REFINERS' OPINION

It is as a result of this situation that producers and refiners throughout the country last week received letters from the department, asking whether they have objections to the material being submitted to the committee, to be spread upon the records, or made public, or in any other way the committee deems to use it.

A general desire to cooperate with the department is shown in letters received from the refiners in answer to the department's communications.

The Senate resolution specifically provides the committee with the power to summon witnesses, subpoena those supposed to have information, and compel answers under oath. It is in this connection that the department has addressed the members of the oil industry as follows:

"While the committee desires to respect the wishes of this department, nevertheless, unless the particular information which otherwise would be withheld by such officials may be released, the committee would, of course, be compelled to subpoena the refiners, not departmental officials, supposed to possess the information and demand this of them."

DETAILS OF INVESTIGATION

The resolution proposes investigation of the following details of the petroleum industry:

Stocks at the end of each month for the years 1920, 1921, and 1922, and the holders or owners thereof.

The prices of crude oil, gasoline, and other petroleum products during these months, and their relation to each other.

Whether or not the recent increases or other recent price changes have been uniform or restricted to particular sections.

Profits of companies refining and marketing petroleum during the period covered by the investigation.

Whether there is any natural reason for the changes in price.

Whether there is any understanding among members of the industry to effect these price changes, or any combination to prevent competition.

COAL DIVISION IN COMMERCE BUREAU

THE FUEL DIVISION of the Bureau of Foreign and Domestic Commerce, which has been devoting itself to the interests of both the coal and the oil industries since it was created shortly after Secretary Hoover became head of the Department of Commerce, has been divided into two separate divisions, one to care for each commodity. Henry C. Morris, who has been chief of the Fuel Division as it has combined the two branches, is head of the Petroleum Division of the Bureau. The new Coal Division will be under the direction of F. R. Wadleigh, who has been handling the coal work under the old system.

As his assistant under the new organization, Mr. Wadleigh will have Wayne P. Ellis, formerly of the Davis Coal and Coke Company, who has been working on the coal strike situation for the Department of Commerce during recent weeks.

DANGEROUS LEGISLATION SEEKS TO LIMIT APPEAL FROM DECISIONS OF STATE COMMISSIONS

ENACTMENT of pending Federal legislation proposing to eliminate the right to appeal from orders of any state administrative authority whatever, save through the biased tendencies of the state courts, will shackle Justice in her efforts to operate fairly in settling disputed questions rising out of decrees of state commissions involving the mining and other industries. This legislation, embodied in a bill introduced by Representative Isaac Bacharach, New Jersey, would grant the state commissions practical immunity from reversal of their decisions. These are the opinions which have crystallized in the minds of leading legal authorities following extended discussions of the bill before a subcommittee of the House committee on the judiciary, before which body the measure now is pending.

Opponents of the measure who have risen to a full appreciation of the dangers of this legislation also point out that its passage would deprive non-resident property owners of the existing right of protection under the Federal laws and the Constitution, since they could not bring action in the state courts because of their non-resident status.

The proposal to deprive the Federal courts of their jurisdiction over cases based upon decrees of state commissions is now pending before the House committee on the judiciary. Since its introduction, January 31, 1922, the measure has been made the subject of extended hearings. During the most recent session, held late in May, a concentrated fire of logical and tangible objections were leveled at the bill by Alfred P. Thom, of Washington, who appeared in behalf of the Association of Railway Executives.

Primarily, the chief objection to the bill raised by Mr. Thom and others who had testified at preceding sessions rests in the argument that Congress does not possess the constitutional authority to eliminate any portion of the Federal judicial machinery without constructing agencies or means of replacing that which has been eliminated.

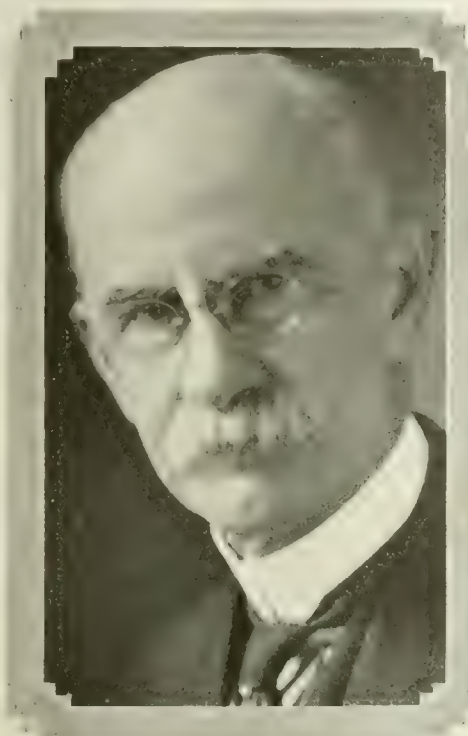
The broad language of the bill as it now stands makes its provisions applicable to many state administrative agencies whose activities closely concern the mining industry. Among these are included state tax commissions, securities commissions, public utilities commissions, industrial commissions, and many other individual agencies possessed of the power of issuing regulations affecting the development of natural resources in a more or less direct manner.

Should the bill pass and any one of this host of state bodies issue a regulation inimical to the industrial organization affected, no recourse of appeal would be available except through the state tribunals, which it has been charged openly, often are so biased in cases of this sort as to cause a warping of judgment.

The full text of the bill follows:

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That no district or circuit court of the United States or judge thereof shall have jurisdiction to entertain any bill of complaint to suspend or restrain the enforcement, operation, or execution of any order made by an administrative board or commission in any State, acting under and pursuant to the statutes of such State, where such order was made after hearing upon notice, nor to entertain jurisdiction of any bill of complaint to suspend or restrain the enforcement, operation, or execution of the statute under which such order was made in any case where under the statutes of that State provision is made for a judicial review of such order upon the law and the facts:

Provided, That nothing herein contained shall limit or affect in any manner the jurisdiction of district and circuit courts of the United States and judges thereof in matters affecting interstate commerce, nor to prohibit such court or courts or the judges thereof from entertaining any bill of complaint to suspend or restrain the enforcement, operation, or execution of any order made by an administrative board or commission in any State in so far as such order affects interstate commerce.



CHARLES S. THOMAS

Advocates of the measure seek to meet arguments showing that the right of appeal is being denied in effect by declaring that any case may be taken to the United States Supreme Court after it has passed through the chain of state courts as demanded by the bill. Answering this contention, those who are fighting the bill stress the point that such appeals to the Supreme Court can be made only where errors have been made in handling the cases, and that it would be impossible to gain a review of the facts upon which the state agencies based their decisions.

"The fact that the decisions of the state courts may be carried to the Supreme Court of the United States for review does not save the situation," Mr. Thom told the subcommittee of the House judiciary committee, before which body the bill is pending, "for when a case is carried there from the highest court of a state it must be by writ of error, and under this writ the judicial power of relief in respect to constitutional rights would be essentially impaired, because on a writ of error, the Supreme Court could only review questions of law and not questions of fact, whereas constitutional rights frequently depend entirely upon the determination of questions of fact."

Definite opposition to the bill also has been voiced during the hearings by former Senator Charles S. Thomas, of Colorado, who told the subcommittee that he did not hesitate to say that "this bill is objectionable from the constitutional standpoint, to say nothing of the fact that in its practical operation it is bound, in my judgment, to prove disastrous."

"This bill is designed to reach a class of cases which will arise from rules of commissions existing or to be enacted in the future that will challenge the application

thereto of such provisions of the constitution as the fourteenth amendment," Mr. Thomas continued. "It seeks to deny to the Federal courts the right to preserve the property and the rights of individuals pending the determination of the constitutional question and thereby in my judgment impinges upon the fourteenth amendment."

BASED ON NEW JERSEY CASE

Mr. Bacharach's bill was inspired specifically in the situation surrounding the setting aside by a Federal judge of the findings of the New Jersey state board of utility commissioners in connection with an application by a utility company for permission to increase street car fares. "It has its genesis, therefore," said Mr. Thomas, "in the grievance of a certain locality which is dissatisfied with the determination of a court of justice and seeks relief by depriving the judiciary of the United States of the prerogative of interfering to restrain an injustice or the operation of an unconstitutional measure. That is the basis nowadays of a great deal of legislation, perhaps the majority of the legislation, which Congress considers."

A glance at the list of names of those who appeared before the House committee to advocate the bill is sufficient indication that the measure simply is an effort on the part of those who desire to furnish every possible support to enforcement of state commission's decisions, without an absolute regard as to whether justice is being looked squarely in the eye while the support is being rendered. These efforts, of course, are inspired by the desire on the part of each state to exercise its authority over industry to the best possible advantage, but it cannot be denied that fairness calls for a check of some sort being placed upon this authority.

SPECIAL PRESSURE INDICATED

Special pressure is being placed behind these efforts in mining states, it would appear. Of the list of twenty states whose commissions authorized John E. Benton, general solicitor of the National Association of Railway and Utilities Commissioners, to appear in their special interests at the recent hearings, all but two are states in which mining is a leading industry. This special interest was shown by the commissions of the following states: Arizona, Colorado, Florida, Idaho, Kansas, Michigan, Montana, Nevada, New Hampshire, New Jersey, New Mexico, North Dakota, Ohio, Oklahoma, South Dakota, Tennessee, Utah, Virginia, Washington and West Virginia.

The subcommittee has not yet given consideration to the bill in executive session following the hearings, and accordingly no report has been made to the full committee, with no basis available for a forecast as to when this action will be taken.

COAL VENTILATION STUDIES

DETERMINATION of various factors connected with the problem of coal mine ventilation is to be sought by new investigation undertaken by the Bureau of Mines at a Pittsburgh station.

Detailed studies are to be carried on in efforts to arrive at definite conclusion concerning the following: most practical method for the measure of flow of air in mines; resistance of flow of air under various conditions of surface, cross sections and obstruction; the coefficient of friction; simple formula for mine ventilation calculation; and the flow of feed in coal and shale.

FEDERAL TRADE COMMISSION REPORTS ON BITUMINOUS COAL

THE FEDERAL TRADE COMMISSION'S attitude toward the mining industry has once more become apparent. In its report to Congress on investments and profits of bituminous coal operators during the past six years, the commission recommends compilation of more accurate and complete information regarding ownership of bituminous coal deposits and mines, true investments therein and profit therefrom; ascertainment of profits of selling companies owned by or affiliated with mining companies and wholesale and other dealers in coal, and establishing the coal industry in the public confidence and protecting it by devising means of Federal supervision and publicity to avoid periods of excessively high prices and severe depression.

The commission believes it possesses full power under its organic act to require from operators facts concerning ownership of coal supply and production and trade imports, but states it is seeking final legal determination of its powers by the Maynard Coal Co. and Claire Furnace cases, now pending in courts in the District of Columbia.

The commission says coal operators should keep separate books for mining coal and holding coal lands for use in the future. The net margin in the sale of coal could then be provided by the investment necessary to mine and sell present output, giving a real return on present operations, says the commission, adding that the present system of including investment in excess coal lands makes the rate of return and the price of coal appear more reasonable.

The commission has figures for only 7 large companies as a basis for determining the amount of investment in excess tonnage. These companies hold nearly 666,000,000 tons, the report declares, estimated to last 108 years, based on their maximum production for 1918. For each ton of coal bought by consumers, over 20 cents a ton would be required if these companies were to pay only six percent on \$22,000,000 invested in excess reserves, it is estimated by the commission.

HEAVY DECREASE IN COAL EXPORTS

EFFECTS of the coal strike upon the export coal trade of the United States became distinctly visible during the month of May, according to statistics compiled by the coal section of the Bureau of Foreign and Domestic Commerce, showing extremely heavy decreases.

Exportation of bituminous coal during May amounted to 399,551 tons, valued at \$1,910,476, as compared with 2,500,374 tons exported during May, 1921, with a value of \$15,064,047. Exports during the eleven months ending May 31, 1922, were 12,495,250 tons, valued at \$65,011,931, as compared with 283,157,675 tons exported during the corresponding period in 1921, with a value of \$283,157,675.

Comparisons of anthracite exportation during May of this year as compared with the same month in 1921 shows a decrease from 434,308 tons, valued at \$4,675,053, to 60,860 tons, with a value of 584,573. Proportionate losses are shown in comparisons for the eleven-months periods.

Exportation of coke showed an increase during May as compared with the same month in 1921, totaling 21,794 tons, valued at \$201,124, as compared with 15,641 tons, valued at \$151,840. Comparison of the eleven-months periods for the two years, however, shows a decrease of approximately sixty percent in tonnage.

WAR MINERALS CASES ARE TO BE SPEEDED BY INCREASED STAFF

WAR MINERALS relief cases pending before the Interior Department are to be speeded toward settlement under a policy placed in effect this month calling for an enlargement of the organization under Commissioner Robinson. A determination has been made by high officials supervising these cases to dispose of the pending claims by expedited action, and it is with this end in view that three assistant engineers and a number of auditors will be added to the commission's staff.

WILL HANDLE FIELD WORK

Under the new organization, the assistant engineers will cover the field work connected with approximately 450 claims which have been reopened by the amended war minerals act and on which the old commission had not taken up engineering investigation, simply dropping them because they did not come within the terms of the old act as regarded stimulation. Added to this work will be the routine field investigations. Reports will be made to a chief engineer, located in Washington, who will consolidate them, add his opinion as a supervising engineer, and pass the records in the case to the auditors, from whom the data will move to the commissioner, thence to the Secretary's office for final approval. It was expected late last month that C. E. Julihn, already associated with the commission as engineer, would be appointed chief engineer, with the assistant engineers to be selected from among those who were with the former commission and have since become connected with the machinery of the Bureau of Mines.

The new organization will be so constructed as to coincide with plans laid by the department when the former commission was dissolved. This policy calls for one administrative head, versed in legal matters, to balance the facts as they are developed and submitted by the engineering and auditing branches of the commission's machinery.

CRITICAL OPINION NOW ANSWERED

Expressions of opinion in certain quarters that it would be better to adopt the original plan of a commission with three members, one of whom would be an engineer, last week were brought to the attention of officials. It was during discussion of this opinion that announcement of the new plan was made, showing that engineering ability is to be massed and concentrated on the field work, with a single administrative head to pass upon the facts after they have been stripped of their technical phases and the audits have been completed.

Judge Edward C. Finney, first assistant secretary of the department, in discussing the situation, pointed out that by the time the engineers and auditors have completed their work on a case, further consideration centers upon a comparison of the developed facts with the law for the purpose of deciding if an award is justified under the terms of the act. That this final judgment is purely legal in nature is the opinion of Judge Finney, and it is this view which prompted the department many months ago to decide upon war minerals relief commission with a single administrative head. Judge Finney laid emphasis upon the fact that the arrangement does not in any way lose sight of the importance of the engineering work of the commission, emphasizing additions to the staff which will enable field work to be carried on with increased efficiency, while the chief engineer will

remain in Washington to be in constant contact with department officials.

Progress made in Congress by the bill creating new federal judges in several states, which will undoubtedly soon become a law, may affect the war mineral relief situation. Should one of these judicial appointments be tendered Judge Robinson, it is, of course, possible that he would prefer to return to the bench. He is known to have a marked favor for jurisprudence. He was for many years chief justice of the Supreme Court of West Virginia, and any extension of the federal judiciary in that state would quite probably evidence a wide desire for his appointment.

Officials last week forecasted an early decision in the Western Rock Properties case, which has been pending before Secretary Fall for some time, upon which hinges settlement of the issue of whether the department can assign profits from one mining operation not stimulated by the government, conducted by a claimant to cover losses sustained by war minerals activities under another operation by the same owners which had been stimulated. Approximately one hundred cases will be affected by this decision. If it is ruled that the department has not the right to take such profits to cover the losses involved, many cases will be reopened and the amount of money to be paid out by the commission in awards may be appreciably increased. It is being pointed out, however, that the decision will not be taken simply and purely as a blanket opinion which will operate alike in all cases, but that it will be modified to conform with the particular conditions involved in each particular case or group of similar cases.

Action as indicated has been taken upon the following claims:

AWARDS RECOMMENDED BY COMMISSIONER

Eleanore Manganese Co., Inc., Butler, Tenn.; \$1,243.35 recommended. Affirmed by secretary.

H. B. Greever, Bluefield, W. Va.; \$5,626.67 recommended. Affirmed by secretary.

Audley H. Stowe, Bluefield, W. Va.; \$8,568.97 recommended. Affirmed by secretary.

Edmund Putman, Johnson City, Tenn.; \$899.18 recommended. Affirmed by secretary.

Coates & Tweed, Duluth, Minn.; \$59,323.20 recommended. Affirmed by secretary.

Shelby J. Gish, Big Timber, Mont.; \$5,436.25 recommended. Affirmed by secretary.

Markstein-Dorn Mining Co., and Carribee Mining Co., J. W. Broekman, owner, Atlanta, Ga.; \$32,404.50 recommended. Affirmed by secretary.

Ernest A. Garrison, Forest Hill, Cal.; \$1,540.75 recommended.

C. N. Gordon and L. C. Emery, Yreka, Cal.; \$548.81 recommended.

G. A. St. Clair, Duluth, Minn.; \$7,724.05 recommended.

Ashby, Long, Stables & West, Montrose, Colo.; \$1,450.39 recommended.

H. C. Stiles, Cartersville, Ga.; \$101.85 recommended.

DISALLOWANCE RECOMMENDED

Robert Brown, Elko, Nevada; claim of no commercial importance.

C. E. Groce, Blythe, Cal.; insufficient showing as to stimulation.

F. M. Knight, Prairie City, Oregon; claim not within the Act.

M. E. Holter and J. A. Faucher, Grant's Pass, Ore.; no additional award.

The Gose Mines, Burk's Garden, Va.; no additional award.

John Madrid, Angel's Camp, Cal.; commissioner holds that claim may be a meritorious one, but can not be further considered as presented.

W. E. Cranmer, Fresno, Cal.; claim of no commercial importance after date of stimulation.

Louis L. Cleaner, Prairie City, Ore.; claim not within the Act.

Carolina Chrome Co., Waynesville, N. C.; no additional award.

W. H. Shewan, Fanning, Nevada; no additional award.

Herman Neipp, Blythe, Cal.; claim of no commercial importance.

Salt Lake Tungstonia Mines Co., Preston, Idaho; no stimulation established.

Harry W. Boynton, San Francisco, Cal.; no stimulation established.

Thomas Bessler, Jr., Sumpter, Oregon; no stimulation established.

Altshuler & Berger, San Francisco, Cal.; no additional award.

Matchless Tungsten Mining Co., Denver, Colo.; claim of no commercial importance, and no stimulation established.

Rare Metals Production Co., Denver, Colo.; no stimulation established.

Andrew Mandoli, Anaconda, Mont.; claim of no commercial importance.

Rare Metals Ore Co., Denver, Colo.; insufficient showing as to stimulation.

Butte Central Mining & Milling Co., Boston, Mass.; no additional award.

Alexander Caldwell, Benmore, Utah; no stimulation established.

Boulder River Chrome Co., Great Falls, Mont.; no additional award.

Arata & Palmer, San Luis Obispo, Cal.; no loss sustained.

Manganese Products Co., Modesto, Cal.; claim of no commercial importance, and no stimulation established.

Casey, Brown & Saunders, Batesville, Ark.; claim of no commercial importance, and no stimulation established.

Joan Mining Co., Duluth, Minn.; no loss sustained.

James T. Dobbins, Salt Lake City, Utah; no stimulation established, and claim of no commercial importance.

Sulphur Gulch Manganese Mines, San Francisco, Cal.; claim not within the Act.

Dibble & Arata, San Luis Obispo, Cal.; no net loss sustained.

Richard J. Fledderman, Yreka, Cal.; claim not within the Act.

Compania Minera de Julinicum, Havana, Cuba; no stimulation established.

W. H. Weller, Jr., Birmingham, Ala.; claimant was merely prospecting and the claim was of no commercial importance.

Compania Nacional de Cobre Y Ore, Havana, Cuba; no stimulation established and there was no loss sustained.

Grant Chrome Co., Inc., Prairie City, Ore.; claim of no commercial importance.

James T. Dobbins, Salt Lake City, Utah; claimant's motion for rehearing does not warrant modification of former decision.

SMALLER LAND OFFICES ARE CLOSED BY CONGRESSIONAL ACTION

SEVERAL land offices in western states are under orders for discontinuance as a result of a move for economy made by Congress in cutting off appropriations for the coming fiscal year for offices where the revenues collected or acreage supervised are smaller than average. Efforts to retain eleven of the doomed offices proved futile when the House refused to take up under a special rule the bill previously passed by the Senate making this provision, though appropriating no funds.

The inhibitory clause contained in the section of the Department of the Interior appropriation bill provides that land offices where cost of maintenance exceeded one-third of the revenues for the fiscal year ending June 30, 1921, be discontinued, as well as offices where the area of vacant public land is less than 100,000 acres. These provisions will bring about the discontinuation of nineteen offices.

The bill specifically excepts all offices where officials are to be consolidated, and also offices at Eureka, Calif.; Burns, Ore., and Seattle, Wash. Offices not mentioned in the following schedule do not come within the scope of the measure and will be retained:

Arkansas: Camden, Harrison (both consolidated with Little Rock).

Colorado: Del Norte (consolidated with Pueblo, Hugo (consolidated with Pueblo), Sterling (consolidated with Denver).

Nebraska: Alliance, Broken Bow (both consolidated with Lincoln).

New Mexico: Clayton (consolidated with Santa Fe), Fort Sumner (consolidated with Russell), Tucumcari (consolidated with Russell).

North Dakota: Dickinson (consolidated with Bismarck), Minot (discontinued; the office has already been consolidated with Bismarck, hence the bill is inoperative, the Minot office being no longer in existence), Williston (Consolidated with Bismarck).

South Dakota: Bellefourche (consolidated with Rapid City), Gregory (consolidated with Pierre), Lemmon (consolidated with Pierre), Timber Lake (consolidated with Pierre).

Washington: Waterville (consolidated with Spokane).

MAGNESITE IN 1921

REPORTS RECEIVED by the Geological Survey from producers of magnesite show that the quantity of crude magnesite sold or treated during the calendar year 1921 was 47,904 short tons, valued at the mines at \$510,177. This quantity was less than half that for the year 1920, and smaller than that for any year since 1916. California was the only producing state, and nearly all the product was calcined for use as plastic material. The output of domestic magnesite for use in refractory products was very small.

In contrast to the large decrease in domestic production there was an increase in imports, which consisted chiefly of crude magnesite. The apparent consumption of magnesite in the United States in 1921 was equivalent to about 113,500 short tons of crude magnesite, 58 percent of which was imported. This consumption is the lowest recorded for many years, probably largely because of conditions in the metallurgic industries, which consume, in the form of refractory material, most of the magnesite used.

THE BROKEN YEAR AND HOW TO MEND IT

By GEORGE OTIS SMITH
Director, U. S. Geological Survey

THE PRESENT lack of public anxiety over the coal situation is not at all novel. The popular feeling toward coal has always been a sort of Irish variety of chills and fever. The average citizen doesn't get thoroughly warmed up on the coal question until he begins to get chilly. Thus it happens that a midsummer coal shortage is likely to be a lukewarm affair.

Yet disregard of unpleasant facts does not stave off disaster. Paralysis of industry and transportation on a country-wide scale is the natural outcome of a coal shortage if carried to the extreme that cannot be many weeks distant. Serious as the present situation is, however, there are fundamental problems more insistent for solution than even the pending differences between employer and employe. These basal problems affect the whole coal industry to some degree but especially the bituminous branch. Clear up the economics of the business and a lasting settlement of labor controversy would become a possibility; leave these questions unanswered, and industrial peace cannot be expected to survive the usual two-year armistice.

What coal producers and coal consumers alike need is reform of the business rather than compromise between parties to the controversy, and in this reform it is absolutely essential that the mine worker should cooperate with the mine operator. Too long have the mine owners treated the coal business as private privilege and too long have the labor leaders with no less monopolistic attitude obstructed every move for underground efficiency and economy. The people's coal costs too much because of the mistaken idea that mine owner and mine worker can continue to fight over contracts and rules. Cheaper coal and larger earnings will come when engineering is emphasized more and bargaining less.

In terms of engineering, the coal industry has a bad load factor; translated into human relations, poorly functioning mines mean poorly employed miners. A longer working year would seem, at first glance, desirable to mine owner, mine worker, and consumer alike. Why not get it?

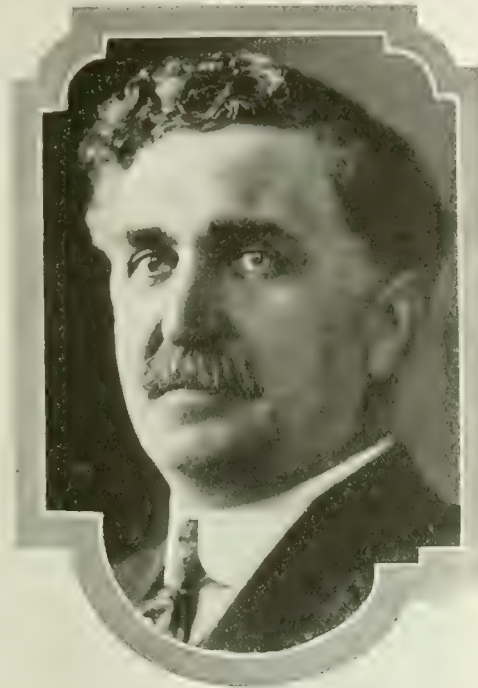
The trouble with our soft coal mines is not so much the broken year as the broken month, the broken week, and even the broken day. The running time is broken into small pieces, for mine operation is not simply seasonal, it is intermittent. In that theoretical mine of the statistician, the average mine of the country, we find November a longer month than June, by 25 percent, and June longer than April, by 10 percent, and yet the working time in a normal November is only 19 to 21 days. And irregularity creeps into the working week and the working day, for Friday and Saturday are normally shorter days than Monday. Granted that the workers in other industries suffer the handicap of seasonal unemployment, our problem, and the national problem just now, is the betterment of the working time of coal mines, and especially bituminous coal mines.

That average mine is located nowhere in particular, and the average working time by states and fields shows marked and significant differences. The average year in the Southern Appalachian region is a fourth longer than the average year in the Central Competitive District. With 215 days as the average year for the whole country we find a 273-day average year in New Mexico, 247 days in Alabama, and 223 days in West Virginia, as against 202 days in Missouri, 197 days in Illinois, and 192 days in Oklahoma. For the soft coal miner this is plainly not a land of equal opportunity.

Markets, quality of coal, mine costs (including wage scales), and ear supply are all factors contributing to these differences in mine employment. Unfortunately, we can gage results better than determine causes; we know the industry to be wasteful, but where are the leaks? The lack of efficiency and the losses due to irregular operation are not universal, for many individual mines work 300 days in the year. Indeed in 1913 when the bituminous mines averaged 232 working days, one-fourth of the half-million men in the industry were employed in mines that worked 280 days or more and nearly 50,000 of them in mines that worked 300 days or more. Our problem in industrial betterment, then, is simply to bring the average mine up to the best; to do that, unfavorable conditions must be replaced by favorable conditions.

First among methods of mending the broken year is the practical remedy of stabilizing the coal market. Many reforms can begin

at home, and my first practical suggestion for bettering conditions of employment at the coal mine will be addressed to the coal consumer. A more regular market for the mine's output is the first essential, and here is the consumer's opportunity to cooperate. You and I need to buy coal at times when we need the coal least. Off-season delivery of coal, even to the small consumer, whose name is legion, will help materially to make the mine worker's June more like his November. Also, each of us should buy of one dealer, not "shop" for coal. If you or I speculate in our 10-ton purchases of coal, how can we deplore the speculative tendency of our coal dealer and the chain of business hazards thus initiated? Is it not plain that the retail dealer who can depend on his regular trade can himself be a better customer of the wholesaler or the selling agent of the mine? The large consumer can do even more to smooth out the irregularities of mine operation by making long-term contracts, even five-year contracts, and providing for delivery to suit the mine as well as himself. Such contracts could be made at lowest prices, for with long-term contracts in hand the mine operator could reduce his costs to a minimum. With such a steady market, full year operation and steady employment would become possible—the mine worker would earn a year's wage, and the public would not pay for idleness. That reform,



GEORGE OTIS SMITH

however, must begin at home, not at the distant mine—the consumer must start it.

With market demands more regular, it will become even more obvious that the overdeveloping industry must suffer deflation; fewer mines and fewer miners can and should furnish the needed coal. Mr. Peabody, as a representative operator, admits that one-third of the operating mines represent a burden on the industry, and he suggests their elimination through bankruptcy. Ellis Searles, the editor of the United Mine Workers' Journal, admits that 150,000 miners, like one-third of the mines, should be eliminated, and he suggests that they leave the mine for the farm. Mr. Peabody estimates that the idle days of our bituminous mines involve an annual loss to the capital and labor employed of not less than \$400,000,000, and I suspect that most of this loss is paid by the consumer.

THE ONLY POSSIBLE METHOD

A longer working year for a reduced force is the only possible method of bringing about the lower wage scale and the larger annual earnings, both of which are generally needed. It is largely by reason of the high unit rate of wages that coal costs too much, and on broad economic grounds it may well be questioned whether the producer should be paid a wage out of all proportion with the wage of the consumer. Can a \$5 a day workman afford to buy coal mined by a \$10 a day mine worker?

To hasten this needed deflation, even though it be accomplished through the working of the law of supply and demand, there must be a better informed and more aroused public opinion. The people need to realize more thoroughly that their industrial life as well as their domestic comfort depends upon coal. This business of mining and distributing coal ranks with the public utilities, and public regulation will surely come as need arises. The words of President Harding, "Deliberate public opinion never fails," expresses truth as applicable now as in the days of Lincoln.

THE LIKELY DEFENSIVE NOTE

Whenever public interest is aroused in the coal question, the defensive note of the coal men is likely to be that appeal for "less government in business," an appeal with which I sympathize so far as governmental regulation might drag politics into business. The political danger that really confronts the coal business is that the leaders in the industry will too long be blind to the trend of the times. In this year of the independence of the United States of America, the 146th, the American people are not reactionary—the old ways of doing business are not to be the new ways. Our reverence for the privileges and rights of private business is giving way to a new attitude. We are asking what is private business and what is public business. Forced to extremes by private disregard of public interest, this tendency in popular thought may even become dangerous, and Secretary Hoover's recent statement to the operators that "if our coal industry does not govern itself it will surely be governed by the public" was a warning of that danger. So I suggest that if "less government in business" is desired, the best means to that end is *more business in business*. Our best mines are so planned and equipped and operated as to demonstrate how efficient coal mining can be, and a similar statement can doubtless be made of certain units in the merchandising of coal; yet the average coal mine and the average coal yard are far from

being gratifying exhibits of that engineering ability of business thrift which we like to regard as typically American.

In bringing about the adoption of these higher standards and more business-like practices in the coal business, public opinion must be the force that refuses capital to open or operate unneeded mines, that refuses to pay wages or profits figured on an expectation of one-third idleness and two-thirds work, that encourages off-season purchase and storage of coal by consumers—and above all we need an enlightened public opinion that puts a ban alike upon the selfish disregard of the interests of the producer of coal by the purchaser, and of the interests of the consumer by both the mine operator and the mine worker. The present unhappy condition of the coal industry is not an aftermath of the war; rather the blame for most of the evils that burden the coal business and have burdened it for years must be laid on the common garden variety of blind selfishness. The sharp buying of coal and disregard of contracts whenever the market favors the buyer, the profiteering by the operator or dealer when his turn comes, the collective bargaining with the walk-out as the club—all these bring unnecessary hazards into the business and add useless costs to the product.

The general welfare is tied up with a regular supply of lower cost coal and larger earnings for those who produce it. And the responsibility for mending the broken year needs to be shared by the many who can help thus to bring about the economic and social benefits arising from coal that the nation's industry can afford to buy, and from mining towns of which the nation need not be ashamed.

LABOR DEPARTMENT ATTEMPTS ANALYSIS OF IRREGULAR COAL OPERATIONS

AN interesting attempt to analyze the "loss of time" by bituminous coal miners has been made by the Bureau of Labor Statistics, ascribing overdevelopment, business depression, and seasonal demand as the most important contributing factors to irregular employment.

Overdevelopment is emphasized in this respect. The bureau's report shows an average of 214 days of operation in each year for the past 32 years. This figure of 214 days of employment is interesting when compared to the statements made by representatives of the United Mine Workers at recent hearings before the House Committee on Labor, when the inference was given that the bituminous coal miners were employed on a far smaller number of days each year.

The bureau estimates that the total bituminous output of Illinois in 1919 could have been produced by 35 percent of the mines and 64 percent of the miners, working 304 days. It is being pointed out, however, by close students of the situation that this estimate is largely theoretical, since the problems of coal storage, transportation, and seasonal demands would operate largely against continuous operation of the mines, with information on these subjects and present conditions in their present status.

Pennsylvania anthracite collieries show less overmanning and overproduction than is indicated in the bituminous industry reports from 29 of these establishments showing an average of 287.7 days worked during the year ending October 31, 1921.

NEW FUNDS FOR BUREAU OF MINES ELIMINATE FEAR OF CUT IN ACTIVITIES

THE BUREAU OF MINES has been granted a nominal increase in funds to cover expenditures during the coming fiscal year as compared with the money provided by Congress for its activities during the fiscal year just ended. In the face of the strict economy program which the government has been following so closely since the creation of the Bureau of the Budget, this increase in appropriations stands as acknowledgment by Congress of the importance of the mining industry. The increase, amounting to \$106,600, brings the bureau's available funds for the coming year up to \$1,580,900, and is especially noteworthy when consideration is given to inclination on the part of those who control the Federal purse strings to gain economy at the expense of investigational agencies, rather than to cut funds intended for purely administrative bodies.

The bureau's appropriations for the new fiscal year are allotted to the organization's various activities as follows:

Mine safety investigations and activities, \$378,000; operation of mine rescue cars, \$211,000, an increase of \$51,000; purchase and equipment of mine rescue cars, \$75,000, being a new item; fuel investigations, \$136,000; mineral mining investigations, \$125,000; petroleum and natural gas investigations, \$135,000; expenses of mining experiment stations, \$170,000; mining station and mining inspection in Alaska, \$35,000, an increase of \$27,675; enforcement and administration of the leasing act, \$155,000, an increase of \$23,000; books and publications, \$1,000; purchase of land adjoining Pittsburgh station, \$28,000; maintenance of Pittsburgh station, \$55,000.

Among the most important increases is that given the bureau for the purpose of financing administration of the leasing act. So greatly have the bureau's activities in this connection increased during recent months that large additions are to be made to the field staff supervising oil leasing, while Bert Dyer, formerly Federal mine inspector of Alaska, has been designated to take immediate charge of coal leasing work throughout the northern tier of the western states. Bureau officials declare that future increases in the amount of work which must be done in connection with enforcement of the leasing law will bring the total up to such a volume as to make it almost necessary for a separate bureau to be established within from five to ten years to conduct this work.

The substantial increase given the bureau for its work in Alaska indicates the intensity with which it is proposed to centralize efforts upon the development of the mineral resources of that territory. This largely will be accomplished by a plan which soon will be placed in effect, under which all the Federal activities connected with the mining industry in Alaska will be brought under the single immediate control of Benjamin D.

Stewart, who has been territorial mining inspector.

The work of the bureau's experts at the various stations will in some instances be rearranged with the opening weeks of the new fiscal year, so as to enable the greatest amount of ultimate benefit to be gained from their activities. Certain investigations which have been carried through to the conclusion of particular phases will be finished or recessed as their progress dictates and men who have engaged in these studies will devote their attentions to other subjects which are felt to be of more immediate importance.

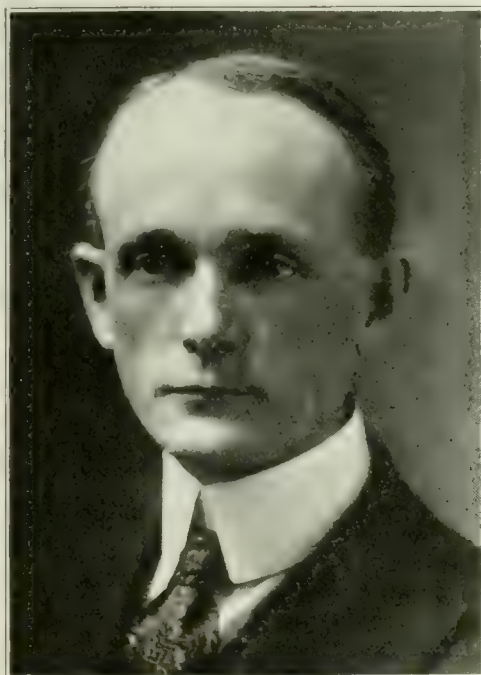
A special demand on the part of the industry for

additional information concerning ventilation and health problems has caused the bureau to lay plans for devoting particular attention to these studies during the next few months. Certain ore dressing problems and studies in volitization which have been finished at the Salt Lake station are to be replaced by ventilation and health investigations to be carried on by a surgeon who is to be assigned specially to make these studies in the mines and camps of that district. Two additional engineers are to be assigned to the Butte district to do this same type of work in the mines of Montana. These experts are to devote much of their time to observation of the ventilation and health systems in use in the district and compilation of the data obtained will later be made available to the industry at large.

Certain investigations in mineral mining, ore dressing, and laboratory investigations which have been carried on at the Pittsburgh station are to be concluded or recessed, and

are to be replaced largely by investigations of more immediate interest, including a series of studies of spontaneous combustion of coal, and testing of the corroding tendencies of mine waters. A complete electrification of the experimental mine at Pittsburgh also is planned so that work may be carried on constantly through assurance of power at all times. Purchase of additional property bordering on the ground now occupied by the Pittsburgh station will prevent interference with and make possible future extension of work at that place.

Uneasiness on the part of operators who have felt that the bureau might be forced to curtail its work at the Salt Lake station has no real basis, it is pointed out by officials. The transfer of Lewis C. Karriek, who has been handling oil shale investigations at the Utah station, to the Boulder, Colo., station, mainly was responsible for this uneasiness, according to reports. Officials declare that the phases of oil shale work with which Mr. Carrick is most familiar have been completed so far as the work at the Salt Lake station is concerned, stating that the transfer does not indicate abandonment of any activities but merely efforts to make the best use of the qualifica-



H. FOSTER BAIN
Director, U. S. Bureau of Mines

tions of individual experts. An engineer closely familiar with the next phases of the Salt Lake shale investigations soon will be assigned to the station.

A small allotment has been made to complete ceramic investigations uncompleted during the past year, the value of which would be totally lost were they to be dropped immediately as a result of the lack of additional appropriations by Congress for this specific purpose.

Fuel testing studies will be curtailed to conform to the cut in appropriations by decreasing some of the purely chemical phases of this work at the Pittsburgh station.

Present plans call for the appointment of a mining economist to assist H. S. Mulliken, director of the newly formed War Minerals Division of the bureau.

Two new mine rescue cars are to be purchased, one to replace the burned car which covered the Terre Haute District, and the other to supplant the wooden car which has been operating in West Virginia.

Expenses of the Geological Survey during the present fiscal year will be met by the following appropriations, which total \$1,450,940:

Topographic surveys, \$325,000; geologic surveys, \$300,000; chemical and physical researches, including potash, \$40,000; mineral resources reports, \$125,000; continuation of the investigation of the mineral resources of Alaska, \$75,000; water supply investigations, \$180,000.

The general land office is given \$718,070 for salaries. Appropriation of \$372,000 is also made for surveyors general in Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. For registers and receivers of land offices. The bill consolidates the offices of registers and receivers into one office at the following land offices: Montgomery, Ala.; El Centro and Susanville, Calif.; Durango, Lamar and Montrose, Colo.; Coeur d'Alene and Lewiston, Idaho; Topeka, Kans.; Baton Rouge, La.; Cass Lake, Crookston and Duluth, Minn.; Jackson, Miss.; Billings, Great Falls, Kalispel, Missoula, Mont.; Lincoln, Nebr.; Elko, Nev.; Bismarck, N. D.; Pierre, S. D.; Vernal, Utah; Walla Walla and Yakima, Wash.

For contingent expenses of land offices, the bill appropriates \$350,000; to protect deprecations on public lands and timber, \$525,000; survey of public lands, inspecting mineral deposits and coal fields, \$650,000.

Preferences in surveys are authorized, including lands subject to disposition under mineral land laws where the survey is not otherwise provided for. For the purchase of metal or other durable monuments for public land survey corners, \$65,000 of the appropriation for land surveys is made available.

The bill also authorizes \$3,110,210 for completion of the construction and equipment of the government railroad between Seward and Fairbanks, Alaska.

ALCOHOL AS MOTOR FUEL

USE OF ALCOHOL as a motor fuel in Cuba is reported by the Department of Commerce. It is a by-product of sugar making, especially the heavy molasses residue. About two and one-half gallons of molasses are required for producing one gallon of the fuel and the low price to which all products of sugar cane have fallen has increased interest in the possibility of supplying motor fuel from this source. The product is called "motor spirit" and sells for from 27 to 30 cents, as against 45 cents per gallon for gasoline.

CONFERENCE ON WATER POLLUTION APPROVED BY CONGRESS

IMPORTANT conclusions bearing on the question of the pollution of navigable waters are expected to be reached by an international conference on the subject under a joint resolution just passed by Congress. Representative T. Frank Appleby, New Jersey, introduced and

both houses have passed a resolution authorizing the President of the United States to call a conference of maritime nations to consider the adoption of effective means to prevent the pollution of navigable streams.

This resolution is a companion measure of other bills introduced by Mr. Appleby and several other Congressmen which are designed to prevent the pollution of inland streams by the discharge of oil, acid



T. FRANK APFLEBY

or other substances from coal mines, factories and other manufacturing establishments. Action on the measures affecting inland streams has been deferred pending negotiations with Cabinet officers as to the matter of jurisdiction over the proposed law. It is considered highly probable that whatever action may be taken or recommended by the proposed international conference bearing on oil dumped into the sea, should the President approve the resolution and call the conference of other nations, will be taken as a precedent for similar action proposed for inland streams.

ACTION ON COST DATA CASE

THE FEDERAL TRADE COMMISSION, in its efforts to secure approval by the courts of its efforts to secure cost data from the steel and coal industries, has turned its attention to the Maynard Coal Company case, pending before the Supreme Court of the District of Columbia, now that its attempts to secure action in the Claire Furnace case have been held up by adjournment of the Circuit Court of Appeals, before which the commission carried the case after receiving an adverse decision in the lower court.

The specific question of whether the commission is possessed of power to demand production cost data from operators of coal mines was argued June 22 before Judge Bailey in the District Supreme Court, the basis being the demurrer of the commission to the injunction granted the Maynard Coal Company in 1920, enjoining the commission from demanding such information.

Attorneys for the coal company argued that the commission only has the authority to ask for data concerning coal that is placed in interstate commerce after it has been mined. The commission has no authority to concern itself with matters relating to the actual mining of coal, which is an intrastate activity, it was declared.

OIL SHALE FACTS OF VALUE ARE DEVELOPED BY SWORN TESTIMONY OF AUTHORITIES

THE moot question of "What is commercial oil shale?" has been brought closer to a definite answer by sworn testimony submitted under conditions virtually those of a court of justice in statements made by experts at a recent hearing of an important case before the registrar of the general land office at Glenwood Springs, Colo. These statements form valuable additions to authoritative knowledge concerning the industry, through the presentation of facts that are to furnish a sound basis upon which development of oil shale deposits may progress when economic conditions offer the opportunity.

Testimony in the case, which is known as "United States, contestant, versus Bailey, Krushnic, et al., contestees, and Ernest Wight, transferee," may be summarized as having brought out in emphasis the following points:

1. When the curve of oil consumption crosses the curve of production, oil from shale will be produced commercially, regardless of the price of oil at that time. This will occur in what is termed "the very near future."

2. The government does not possess definite data concerning oil shale fields and their possibilities. This is not due to a lack of ability on the part of the government's experts, but to an apparent lack of facilities to secure worthwhile information. Those who closely observed the trend of this particular case have declared that the testimony submitted indicates that the government's system of fact-finding is at fault.

3. The minimum requirements for commercial oil shale land is 15 gallons to the ton in a bed not less than one foot in thickness.

4. A thorough examination of the land and extensive experimental work is necessary as a preliminary to commercial oil shale operations.

5. The economic features, aside from richness of the shale itself, are of paramount importance.

6. The oil shale deposits of Colorado are 50 per cent. richer than those of Scotland.

7. Formerly it was thought that only the middle section of the Green River formation contained valuable oil shale; it was developed at the hearings that all three sections are valuable for a vertical distance of 2,370 feet.

8. Thoroughness of the work of private investigators is well illustrated by the testimony of one witness that he had made 6,000 tests on oil shale.

9. The oil shale industry is a large, low grade project

and requires much capital, time and experimentation.

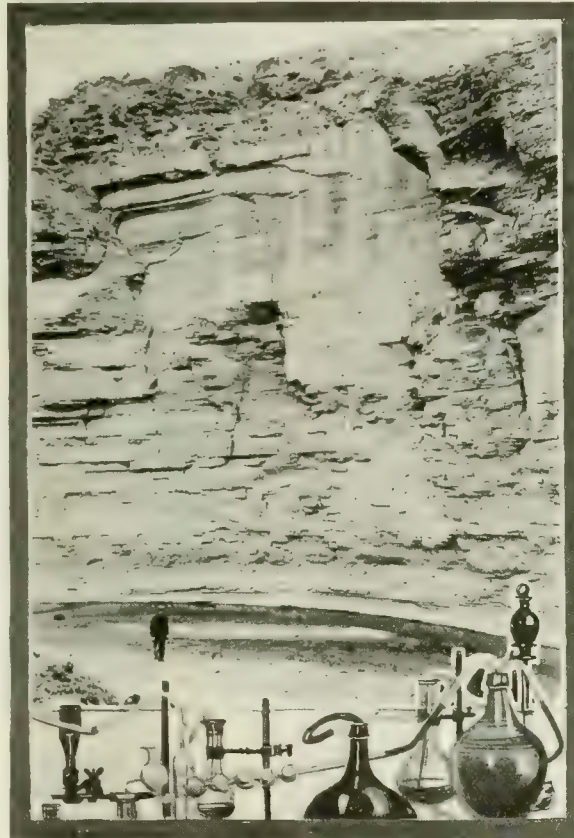
C. L. Duer, mineral examiner for the government, testified that he had no personal knowledge of the quantity of oil the deposits in question contain, stating that he ascertained the oil bearing possibilities of a particular piece of shale rock by "the appearance of it, color, specific gravity and weight," with only the crudest sort of tests being made "to see whether the shale would burn or whether you could get a test for oil. Testimony of much the same nature was given by O. J. Berry, another mineral land examiner, who declared that he never had made shale analyses and that his actual experience in determining the various grades of shale as to oil content has consisted of "just examining the shale and also comparing it with other shales which which I have been more or less familiar and comparing the specific gravities and the color and other physical appearances."

"In view of that fact, how do you distinguish, Mr. Berry, between those strata which are of commercial value and those which are not?" the witness was asked. He answered, "Well, I thought I had mentioned that in detail, and in my opinion, it depends solely on the thickness of the beds; and my reason for giving this answer is that it is similar to the mining of coal."

When the time comes that a demand will be opened for shale oil, there is absolutely

no doubt that the problems connected with the mining and treating of the shale will have been worked out satisfactorily, Roderick D. Burnham, mining engineer, testified. Taking up the economic phases of shale development, Mr. Burnham declared that the necessity of large-scale operation will require employment of a large number of men. He stated that as an approximate figure the total probably will represent five tons to the man. In other words, a property producing 25,000 tons a day will have to operate with 5,000 men. He emphasized the importance of taking into consideration the factors of keeping a constant flow of supplies going in to the men when they are working underground, and the prime importance of provision of ample dumping grounds for spent shale as a means of rounding out a complete mining program.

After stating that the shale deposits in Colorado are "fifty percent better" than those of Scotland, Mr. Burnham continued the comparison and, while admitting that labor costs in this country always will exceed those in Scotland, he expressed the opinion that the American



A huge oil shale deposit near Watson, Utah

shale eventually will be produced at a lower cost than that existing in the Scottish fields. "Here is the whole idea," he said. "In America, with high-priced labor and high costs of materials, and the driving and force that Americans put into everything, we are constantly trying to do the same thing in half the length of time taken by the other fellow. The consequence will be that when the thing is finally worked out, we will have a process not necessarily identical with the Scottish, though there may be several similar principles, but one which will be very much more rapid."

GOVERNMENT BROUGHT SUIT

In this particular case, the government brought suit to cancel certain locations of oil shale land in the Debeque district on the ground that the land was not mineral and not valuable for oil shale, that the locations were not made according to law, and that the annual assessment was not legally performed. The mining law requires that, to make a valid placer location, the lands included in the location must be valuable chiefly for the minerals for which the land is located. It appeared that the transferee had purchased the interests of the contestees prior to the commencement of the suit, and the expert witnesses who were called, aside from those called by the government, were called by the transferee.

A detailed report of the proceedings in this case appears in the most recent issue of the Colorado School of Mines Quarterly, and includes conclusions drawn by Dr. Victor C. Alderson, president of the school.

NOTES OF OIL SHALE INVESTIGATIONS

Combustion analyses of standard Colorado oil shale have been made by the Bureau of Mines at Boulder, Colo. The method appears to be entirely satisfactory, and work has been started on the elementary analysis of standard Utah shale and oil shale from Scotland. Determinations of nitrogen and sulphur in spent shale and oil sampled from the various rotary retort tests have been made. The sodium peroxide method for determining sulphur in oil shale and shale oils has been adopted for use in the laboratory at Boulder.

Attempts also have been made by the bureau at Boulder, Colo., to improve the quality of oil produced from Colorado shale by varying conditions to which the oil vapors are subjected after they have been produced. In connection with the work in Salt Lake City, L. C. Karrick, associate oil-shale technologist, has apparently shown that a superior quality of oil is obtained when the vapors are condensed very rapidly. This result is altogether unexpected and the work will require careful checking.

Experiments conducted at the Salt Lake City station of the bureau, in the course of the oil-shale investigations, indicate that the stationary and revolving types of small shale retorts give equivalent results in yield and quality of oil when the progress of destructive distillation of the shale particles is identical in both. This work requires elaboration as in the Boulder, Colo., laboratory the assay retort has always produced oil superior in quality to that made by the larger rotary.

BRITAIN'S PLACE IN EXPORT COAL TRADE HANGS IN BALANCE

FORECASTS of the future of the British coal industry by the staff representing the Department of Commerce in Great Britain indicate that much will depend upon whether the curve of output per man will definitely and persistently reverse the downward tendency of the past 40 years. At the present time this curve is turning upward.

"Allowing for the fact that the miner underground now working only 7 hours instead of 8 and not working a full week, the efficiency is about the same as in 1913," says the staff report submitted to Secy. Hoover.

"The factors which limit the demand for British coal are the German reparations coal, the decreasing consumption due to stagnation, American competition, substitution of other sources of power, schemes for economizing coal, and the use of central heating instead of the domestic open grate.

"In general it is probable that the demand for coal will probably increase with cost of production and will continue higher than before the war."

During the past four years there has been an almost unbroken decrease in the number of tons of coal mined per man per annum in British mines. Starting with the decade from 1882 to 1892 the output was an average of 297 tons, but it sank steadily until in 1920, it was only 184 tons. In spite of this, however, the total output of the United Kingdom steadily rose by employing more men in the coal mines until in 1913 it reached its apex with a production of 287,500,000 tons. From this point, the total output has almost steadily declined until in 1921 it was only 163,000,000 tons.

Added to these factors, is this:

Although the total output of the United Kingdom was increasing it was not holding its relative position as a producer of the world's coal, as the percentage of the world's coal furnished by the United Kingdom in 1899 was 30.4 percent, but gradually dwindled to 21.7 percent in 1913.

SECRETARY FALL DEFENDS OIL POLICY IN REPORT TO SENATE

CRITICISM of the Interior Department's policy in administration of the naval oil reserves and leases has diminished almost to the vanishing point following the report on the subject sent to the Senate by Secretary Fall, in which is included data from the General Land Office, Geological Survey, Bureau of Mines and Navy Department to defend action taken in awarding rights to offset wells and leases on the reserves, most notably in the Teapot Dome in Wyoming.

Since the main issue in the controversy, aired on the floor of the Senate through several days, hinged upon the question of underground drainage of the reserves by wells drilled on adjacent property, Secretary Fall devotes much space in his report to the quoting of authorities to uphold the department's theory that drainage of the government's oil reserves could only be eliminated by the action taken by the department.

Secretary Fall quotes Mark L. Requa, who was in charge of the Oil Division of the Fuel Administration, to the effect that the government must devise some system of production to secure adequate storage, referring to the possibility of drainage and depletion. Reference also is made to statements by the late Secretary of Interior Lane who declared that the California reserves would be valueless in 15 or 20 years by reason of drilling on adjacent lands.

Woofing and Warping

VIII. Representative Frank W. Mondell

A Series of Scrutinies Directed Toward Notable Legislative Personalities

By IRA L. SMITH



Frank W. Mondell

reason them out before he acts, rather than hop at them prematurely, and you can see why he doesn't gyrate in the public mind as much as some of his fellows.

He got his first good healthy crack at prominence many moons ago when a flock of women folks got curious as to what kind of interior decorating was inside of voting booths. It was then that he vaulted into the well-known limelight by piloting through the House the amendment that made our polling places co-educational affairs.

He is well-flavored with affability, and works as earnestly as a window cleaner after a rain storm. His speech on the floor is quite distinctive in that it is bulged with split-hair distinctions which go along arm in arm with redundant generalities or something of the sort, if you know what I mean.

It is interesting to take a slant at the deftness he uses in sailing along under a policy that drags to him a lot of support that would otherwise consider him a total stranger. His "is and yet ain't" stuff unlocks the dope on how he gets along with so many factors. Not that he wiggles or shifts, but he drives his nails where it is best that they should go.

Folks do be twittering that he always is looking out for Frank Mondell. But that's not as much of an indictment as it might seem, because the bloke that holds out an eye for himself to the best advantage knows it ill affords him to do anything that catches other folks in the neck because that stuff is likely to boomerang back at him.

Well, as I says before, Ah me, woe is me that I am! But my worries and troubles are as vapory as one of A. Conan Doyle's ectoplasms when compared with the brow-wrinklers that make Mr. Mondell's business-like way of tackling things work till its tongue hangs down to its shoe-laces from fatigue.

*A*H, me!
Woe is me that I am!

A-lack-a-day, Alas!

But still my fate might be worse. I might be a worry-laden majority leader in the House of Representatives. Than which there are few huskier tasks, what with a myriad republicans piled many deep in that legislative hall as a result of the tidal wave that carried them up to Capitol Hill and left them there when it receded.

Frank Mondell is of an unusual sort to be leading a numberless throng of legislators through the can-tankerous complexities of a reconstruction session of Congress, when many of the members are prone to take advantage of the situation and make attempts to hoist themselves over the traces.

Mr. Mondell, who has been representing Wyoming in the House ever since the days when Heck was in knee pants, has little of the spectacular that you would expect to stick out all over such a notable. So far as this stuff they call dynamic force is concerned, he hasn't a great deal more of it than the average of us natives. And it seems funny that this rather low-geared fellow should be holding down the berth that was occupied in other times by some of the greatest legislative flashes that ever O'Sullivaned themselves into the House.

The main reason that he isn't a solon of the sky-rocket sort is found in his ability to adapt himself to his surrounding in a way that would make a chameleon turn green with envy. Hook this up with his inclination to sit and look matters in the face and

COMBINE OF U. S. OIL CAPITAL IN FOREIGN FIELDS WAITS UPON CLEARING OF EUROPE'S AFFAIRS

THE PROPOSED combination of domestic oil companies in efforts to further the progress of American capital in foreign oil fields, which stood in the limelight early in 1921, has not been discarded, but merely is awaiting a propitious time to resume the interesting position it held many months ago, according to authoritative opinion expressed in Washington.

EXPECTED FAVORABLE CONDITIONS

Plans whereby the larger American companies were to join in efforts of this type were laid when it was not supposed that Europe's internal problems would defy solution for so long a period, those behind the move feeling that by the time it was fairly well instituted these problems would have cleared sufficiently to allow progress to be made. Europe's affairs and political situations became increasingly complex, however, and it soon became evident that no practical plans could be put into effect until a solid basis was laid so far as the foreign governments and their administration and policies were concerned. This explains the silence which has surrounded the proposed combination during recent months.

Indications that the plan has not been discarded are seen, however, in its mention by close observers in connection with recent reports that the European nations with which the United States is involved in question relating to development of foreign fields now are adopting policies favorable to exploitation of those fields by American capital. It is highly reasonable to expect that the plan will be resurrected when sufficient progress has been made in solution of Europe's internal issues to warrant that action, according to semi-official views expressed in Washington.

LARGELY IN NEAR EAST

Since such a combination of efforts would be exercised largely in the oil fields of the Near East, the greatest interest is being attached to the evident progress made by the United States government in reaching an agreement with Great Britain concerning mandates involving development of these fields. It is the view of officials in Washington that these matters have been allowed to rest this long without becoming subjects of action because of the vast amount of problems confronting Britain during the post-war period, rather than as the result of any indifference to act.

Indications that the British government is directing its attention especially toward the Mesopotamian situation is found in a discussion which recently centered around the subject on the floor of the House of Commons. The Minister for the Colonies was asked point-blank whether any oil fields had yet been discovered in the mandated territory of Mesopotamia; whether exploitation is in progress; what private company or companies are carrying out this work, and with what results, if any. Questions also were asked as to what steps had been taken to see that in granting of licenses to explore for oil, no special preference was given to favored companies or individuals.

Official reports of the answers given to these ques-

tions indicate that there is some difference of opinion, or at least doubt, among British officials concerning the value of the oil fields included in the mandated territory. The answer given the House for Mr. Churchill is reported in the following language:

"There are signs of oil in various parts of Iraq, but how far the deposits are worth working or not is not yet known. No exploration work or drilling is being carried out in any part of Iraq, except in the narrow strip of territory transferred from Persia to Turkey under the Turco-Persian Frontier Protocol of November 17, 1913, which is covered by the concession granted to Mr. D'Arcy by the Persian government and which the Turkish government agreed to recognize in the Protocol referred to. The Iraq government is the inheritor of the rights of the Turkish government and will receive a royalty of 16 percent of the net profits on any oil which may be obtained in that territory. The form of government which has been set up in Iraq affords ample guarantee of the rights of the natives of the country in the matter of concessions as in other respects, while the rights of other nations are safeguarded by Article 11 of the draft mandate. There is no reason to fear that special preference will be shown to any particular company or individuals."

OTHER INTERESTING QUESTIONS

Two other questions asked by members of the House are of interest in studying the situation. They follow:

"How does it come about that the Prime Minister in this House two years ago stated that there were considerable oil deposits in Iraq, and held that out as a reason for the vast expenditure?"

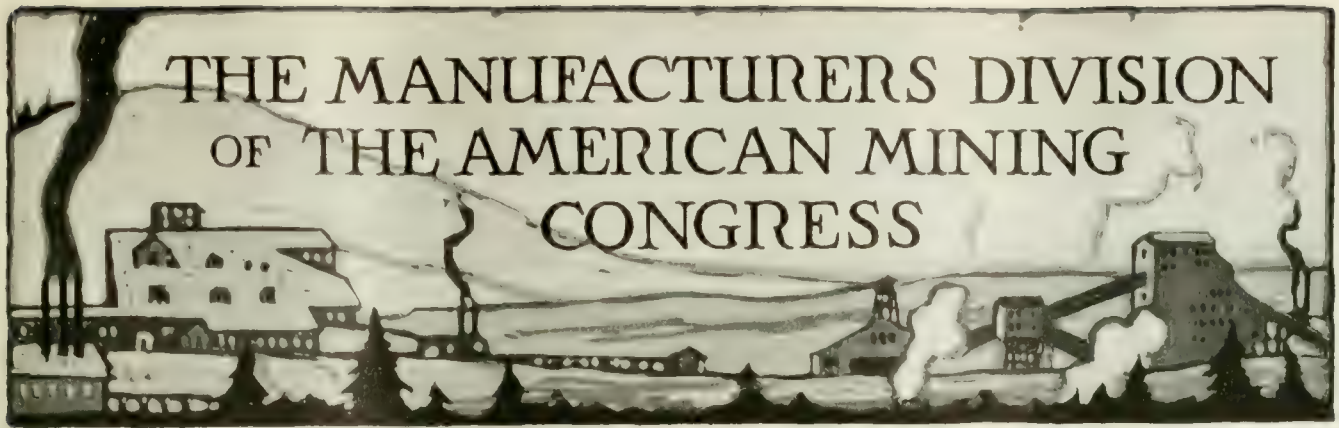
"In the event of this oil being exploited by us, has consideration been given to the extent of the standing army which will be necessary, or what the cost will be?"

No direct answers were given to either question.

CHEAPER PHOSPHOR COPPER

CHEAPER production of producing phosphor copper may be evolved by studies soon to be undertaken by the Bureau of Mines through its Ithaca, N. Y., field office, which maintains general contact with the metallurgy of non-ferrous alloys and copper alloys. In particular, investigation will be made of the preparation of phosphor copper by smelting direct from phosphor rock. It is believed that this study also should throw light on the theory of reduction of phosphatic ores.

The Bureau also plans a study of preparation of such alloys as that of 50 percent copper and 50 percent lead, it being quite possible, in the opinion of experts, that present methods might be improved, and many requests having been made asking that such information be developed.



CLEVELAND DISPLAY OF MINING EQUIPMENT TO BE EXCEPTIONALLY COMPREHENSIVE

THE NATIONAL EXPOSITION OF MINES and Mine Equipment of the American Mining Congress to be held at the Public Hall in Cleveland, Ohio, October 9-14, 1922, in conjunction with the Twenty-fifth Annual Convention of the American Mining Congress, bids fair to be the largest and most comprehensive display of mine equipment and mine supplies which has ever been staged.

HIGH INTEREST EVIDENCED

The best evidence of this statement is that on June 15, practically four months prior to the opening of the Cleveland meeting, approximately one hundred representative manufacturing concerns have already contracted for space on the exposition floors at Cleveland and are planning interesting and attractive displays of different types of mine equipment and supplies.

As a matter of fact the value of these expositions both from the standpoint of the mine operator and from the viewpoint of the manufacturer is steadily being recognized among an increasing group of firms. In fact, it is believed that these expositions, if they are continued as successfully in the future as in the past, will become a permanent annual event, furnishing the operating officials in charge of mining enterprises the opportunity of studying and comparing the latest types of equipment and machinery in order to base their plans for the purchase of equipment.

The value of these expositions from the standpoint of the mine executives or mine operators is indicated by the following paragraph recently received from a prominent mine executive who has charge of some of the largest metal mining developments in this country:

MUCH DEPENDS UPON MACHINERY

"The continued maintenance of the development of the mining industry in the United States is largely dependent upon the further utilization of labor saving equipment and machinery. The successful mine operator and mine manager is therefore studying with the greatest care every type of equipment which indicates the possibility of reducing operating cost, and I believe that these annual expositions of the American Mining Congress offer a very fine opportunity for mine operators to compare the latest types of such equipment and machinery. In other words, these expositions furnish the essential facts upon which intelligent buying of equipment can be made. The value of these expositions

to the mine operator is perhaps the best indication of their value to the manufacturer."

To the manufacturer of mine equipment and mine machinery, these expositions are of course of even greater interest and value. The expositions are based on the idea of cooperation between the American Mining Congress—the national chamber of mines and mining—and the mine operators who constitute its membership with the manufacturers who have played and will play such an important part in the further development of the mining industry.

To the manufacturer, therefore, who is interested in the marketing possibilities in the mining industry for his production, the National Exposition of Mines and Mine Equipment furnishes an opportunity not only of making an effective display of his equipment and machinery but of securing the personal contact with hundreds of mining men who are the practical users of mine equipment and therefore the potential purchasers of such production and also of securing national advertising at a relatively low cost, for, as a matter of fact, practically every important mining state is represented at the convention and the exposition.

ATTITUDE IS INDICATED

The attitude of the manufacturers of mine equipment and supplies in regard to these expositions is best indicated by a few statements which have been sent in from time to time, expressing the opinion of different manufacturers in regard to these expositions.

One official of a large company handling explosives writes: "The writer has found from attending a number of these conventions in the past that officers and officials of mining and oil companies do attend these conventions in large numbers. They visit the booths at the exposition and they are willing and glad to listen to what the manufacturer has to say in regard to his product. Their problems can be and are solved just as much by what they hear in the manufacturers' booths as from the discussion in the convention hall."

Another manufacturer primarily interested in equipment for metal mining production writes as follows: "The participation of this company in the last exposition of mines and mine equipment of the American Mining Congress was so profitable that we were glad to join any movement that would insure the continuance of these annual expositions on a sound business basis.

"By constant and concerted effort the Manufacturers'

Division of the American Mining Congress should be able to make the character of these annual expositions and conventions of such value to the industry that no individual or organization in any way connected with mining can afford not to be represented."

In view of these facts and because of the whole-hearted cooperation which the representative Cleveland committees are giving to the carrying out of the plan for this Twenty-fifth Annual Convention and Exposition in such a way as to make it the largest and most representative gathering of mining men which has ever been held, it is confidently anticipated that this meeting in Cleveland will be an unusually significant and notable industrial event.

While it is impossible to state definitely at the present

time the final arrangements in regard to public exhibits, still it is evidently known that the United States Government will participate through the Bureau of Mines, that the Republic of Mexico is planning to be represented with a larger and more noticeable display of mineral resources than that in Chicago, that the Territory of Alaska is arranging to stage an interesting and representative central exhibit at Cleveland and that there will be a number of particularly interesting exhibits from several of the important western mining states.

Every operating official or mine owner who visits Cleveland will have the opportunity of seeing and studying those types of equipment and supplies and machinery which are a vital factor in the further development of his production and in the securing of greater saving, lower cost and larger production.

PRELIMINARY LIST OF EXHIBITORS

THE FOLLOWING manufacturers of mining equipment already have placed themselves upon the list of exhibitors whose products will be displayed at the National Exposition of Mines and Mining Equipment, to be held at Cleveland, October 9-14, in conjunction with the annual convention of the American Mining Congress:

- Aldrich Pump Co., Pittsburgh, Pa.
 Allis-Chalmers Mfg. Co., Milwaukee, Wis.
 American Blower Co., Detroit, Mich.
 American Brake Shoe and Fdry. Co., New York City.
 American Mine Door Co., Canton, Ohio.
 American Steel and Wire Co., Chicago, Ill.
 Atlas Car and Mfg. Co., Cleveland, Ohio.
 Austin Machinery Corp., Chicago, Ill.
 Automatic Reelosing Circuit Breaker Co., Columbus, Ohio.
 C. O. Bartlett and Sons Co., Cleveland, Ohio.
 California Cap Co., San Francisco, Cal.
 James H. Channon Mfg. Co., Chicago, Ill.
 Chicago Pneumatic Tool Co., New York City.
 Cleveland Rock Drill Company, Cleveland, Ohio.
 Clinton Refrigerating Co., Clinton, Iowa.
 Coal Age, New York City.
 Conneaut Shovel Co., Conneaut, Ohio.
 E. I. duPont de Nemours & Co., Wilmington, Del.
 Duro Metal Products Co., Chicago, Ill.
 Easton Car & Construction Co., New York City.
 Edison Storage Battery Co., Orange, N. J.
 Electric Rwy. Improvement Co., Cleveland, Ohio.
 Electric Storage Battery Co., Philadelphia, Pa.
 Fairmont Mining Machinery Co., Fairmont, W. Va.
 Federal Electric Co., Chicago, Ill.
 Fleming, J. R., & Sons, Inc., Scranton, Pa.
 Flexible Steel Lacing Co., Chicago, Ill.
 General Electric Co., Schenectady, N. Y.
 General Motors Truck Co., Pontiac, Mich.
 Goodman Mfg. Co., Chicago, Ill.
 Hercules Powder Co., Wilmington, Del.
 Hockensmith Wheel & Mine Car Co., Penn, Pa.
 Robt. Holmes and Bros., Danville, Ill.
 Hudson Coal Co., Scranton, Pa.
 Hyatt Roller Bearing Co., New York City.
 Ironton Engine Co., Ironton, Ohio.
 Jacobsen and Schraeder, Inc., Chicago, Ill.
 Kenova Mine Car Co., Kenova, W. Va.
 Keystone Consolidated Publishing Co., Pittsburgh, Pa.
 Keystone Lubricating Co., Philadelphia, Pa.
 Koehring Company, Milwaukee, Wis.
 A. Leschen and Sons Rope Co., St. Louis, Mo.
 Lincoln Steel and Forge Co., St. Louis, Mo.
 Lorain Steel Co., Johnstown, Pa.
 Ludlow-Saylor Wire Co., St. Louis, Mo.
 Lunkenheimer Co., Cincinnati, Ohio.
 Mancha Storage Battery Locomotive Co., St. Louis, Mo.
 Manierre Engr. and Machy. Co., Milwaukee, Wis.
 Merrick Seale Mfg. Co., Passaic, N. J.
 Mine Safety Appliances Co., Pittsburgh, Pa.
 Mining Safety Device Co., Bowerston, Ohio.
 Morgan-Gardner Elec. Co., Chicago, Ill.
 Morse Chain Co., Ithaca, N. Y.
 Myers-Whaley Co., Knoxville, Tenn.
 Ohio Brass Co., Mansfield, Ohio.
 Oster Mfg. Co., Cleveland, Ohio.
 Penton Publishing Co., Cleveland, Ohio.
 Philadelphia Storage Battery Co., Philadelphia, Pa.
 Pittsburgh Machine Tool Co., Brad-dock, Pa.
 Post Glover Elec. Co., Cincinnati, Ohio.
 Reading Steel Casting Co., Bridgeport, Conn.
 Roberts & Schaefer, Chicago, Ill.
 Rock Products, Chicago, Ill.
 John A. Roebling's Sons Co., Trenton, N. J.
 Rome Wire Co., Rome, N. Y.
 Safety Equipment Service Co., Cleveland, Ohio.
 Siegmund Kahn, New York City.
 Simplex Wire and Cable Co., Chicago, Ill.
 Southern Wheel Co., St. Louis, Mo.
 Stearns Conveyor Co., Cleveland, Ohio.
 Streeter-Amet Weighing & Recording Co., Chicago, Ill.
 St. Louis Structural Steel Co., St. Louis, Mo.
 S F K Industries, New York City.
 Templeton, Kenly & Co., Ltd., Chicago, Ill.
 Timken Roller Bearing Co., Canton, Ohio.
 W. S. Tyler Co., Cleveland, Ohio.
 United Filters Corp., Hazleton, Pa.
 Watt Mining Car Wheel Co., Barnesville, Ohio.
 Wellman-Seaver-Morgan Co., Cleveland, Ohio.
 Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.
 Geo. D. Whitcomb Co., Rochelle, Ill.
 Wood Shovel and Tool Co., Piqua, Ohio.

SUPREME COURT DECISION IN CORONADO CASE SETS IMPORTANT PRECEDENT

NO RECENT decision by the Supreme Court has found more general discussion trailing in its wake than is following the opinion handed down in the Coronado Coal Company case, brought against the United Mine Workers of America, in which the court held that labor unions are suable.

Coming when it did, it was advanced as a major factor in the threatened rail strike, being placed in the light of preventing the rail men from quitting their jobs under organization because of the fact that they might thus be laying their unions open to susceptibility of suits being brought against them because of damage caused the railroads should a strike eventually occur.

ATTACKED BY UNIONS

The convention of the American Federation of Labor at Cincinnati, which opened its session shortly after the decision was handed down, made itself the center of a fire of criticism because of the attitude which it took concerning the high tribunal's decision. Widespread comment has arisen upholding the theory that any organization which gains privilege through the massing of members should be held responsible for its actions as a joint agency. It is in upholding this theory that exception generally has been taken to the heated and hasty declarations made at the Cincinnati convention.

The suit was filed by the coal company in September, 1914, following destruction of its property alleged to have occurred as a result of activities of the mine union. The Court of Appeals of the Eighth District had awarded the coal company \$745,000 damages. The miners union resisted the suit on the ground that unincorporated associations are not subject to suit. In setting aside this contention the Supreme Court holds that the United Mine Workers is not a national but an international union, intended to be a union of all workmen employed in and around coal mines, washers, and coke ovens, the purpose being to increase wages, and improve conditions of employment by legislation, conciliation, joint agreements and strikes. "No organized corporation has greater unity of action, and in none is more power centered in the governing executive bodies," the opinion of the court declared.

PROTECTION MUST BE FURNISHED

After pointing out protection which the union has received from the hands of the law through the nature of its organization, the court declared that "It would be unfortunate if an organization with as great powers as this international union has in the raising of large funds and in directing the conduct of 400,000 members in carrying on, in a wide territory, industrial controversies out of which so much unlawful injury to private rights is possible, could assemble its assets to be used therein free from liability for injuries by courts committed in course of such strikes. To remand persons injured to a suit against each of the 400,000 members to recover damages and to levy on his share of the strike fund, would be to leave them remediless."

Citing a mass of supporting legal and legislative precedents, the court declared that "In this state of Federal legislation we think that such organizations are suable in the Federal courts for the acts, and that funds accumulated to be expended in conducting strikes are subject to execution in suits for torts committed by such unions

in strikes." It also was held that labor unions are suable under sections 7 and 8 of the Anti-Trust Act.

In the specific case of the Arkansas strike involved in the action brought by the Coronado Company, the court held that it was a local disturbance unauthorized by the international union. Reviewing the issues in the strike the court declared that strike funds may be subject to payment of any damage which is recovered. It held, however, that the strike was not for the purpose of restraining or monopolizing commerce, holding that the obstruction to coal mines is not a direct obstruction to interstate commerce in coal although it, of course, may affect it by reducing the amount of coal to be carried in that commerce. It is interesting to note that the opinion stated that "Coal mining is not interstate commerce, and the power of Congress does not extend to its regulation as such."

OBJECT OF UNION EFFORTS

The court admitted that union leaders desire to press unionization of non-union mines not only as a direct means of bettering the conditions and wages of the workmen, but also as a means of lessening interstate competition for union operators which would lessen the pressure of those operators for reduction of the union scale, or their resistance to an increase. The opinion held, however, that the latter "Is a secondary or ancillary motive whose actuating course in a given case is the pendant on the particular circumstances to which it is thought to make it applicable." It says that if unlawful means had in this case been used by the national body to unionize mines whose product was important, actually or potentially, in affecting prices in interstate commerce, the evidence would clearly tend to show that that body was guilty of an actionable conspiracy under the Anti-Trust Act.

FLUORSPAR IN 1921

FLUORSPAR shipped from mines in the United States in 1921, according to Hubert W. Davis, of the United States Geological Survey, Department of the Interior, amounted to approximately 35,600 short tons, valued at \$708,000, a decrease of 81 percent in quantity and of 85 percent in value as compared with 1920.

The general average selling price per ton f. o. b. cars at shipping points for all grades of fluorspar in 1921 is estimated at \$19.89, which is \$5.37 less than the average price in 1920.

Total shipments in 1921 were the lowest recorded for any year since 1908. The shipments from Kentucky exceeded those of Illinois for the first time since 1904.

Reports from steel manufacturers, who produce about two-thirds of the basic open-hearth steel made in the United States, show that they consumed 46,341 short tons of fluorspar in 1921, as compared with 80,545 tons in 1920. This group of steel manufacturers also reported stocks of fluorspar on hand January 1, 1922, amounting to about 19,800 short tons, as compared with 45,125 tons on January 1, 1921. These reports, therefore, show that these steel plants consumed only 1,216 tons of fluorspar more than they had in stock at the beginning of 1921.



IMPORTANT LEGISLATION is holding Congress in session through the heat of summer despite the fact that the majority of the members would like to take a rest from the burdensome grind of Congressional activity which has marked the session since it convened last December.

Fairly reasonable progress is being made by the Senate in going over the various schedules in the revised tariff bill and there are good prospects that this measure will be enacted into law within the next few months. The burden of Congressional action is now on the Senate as the House has practically passed all of the important legislation, the last bill to be considered being the measure to grant a subsidy to American ship owners and operators in order to develop the merchant marine and relieve the government of loss occasioned by operation of vessels under the Shipping Board. President Harding has passed out word that the ship subsidy bill must be passed this session or he will call an extra session.

The Soldier Bonus bill involving an outlay of almost \$4,000,000,000 is also a bone of contention, it now being before the Senate for action, having been reported by its Finance Committee. No provision is made for extra taxes to meet the bonus, its advocates claiming that no additional taxes will be necessary for at least three years as the bonus obligations may be met by reduction of government expenses and receipts from foreign loans.

In consideration of the tariff bill, the mining interests of the country were successful in placing cyanide on the free list and in imposing a duty on manganese. The Finance Committee had recommended a duty on cyanide and the free admission of manganese but Western Senators convinced the Senate that it was essential for the mining industry that cyanide be admitted free as otherwise it would be a further burden with an added cost of operation, while a duty on manganese was necessary in order to protect American producers from foreign competition.

The Senate adopted a duty of twenty-five cents per pound on quicksilver, although a duty of thirty-five cents was urged by Senators Johnson and Shortridge of California. Duties of 10 percent ad valorem were placed on amorphous graphite; 20 percent on crystalline and two cents per pound on flake. Senator Nicholson, Colorado, will seek higher duties when the bill reaches its final stage in the Senate. Amendments by Senator Poindexter, Washington, were adopted, increasing the duty on crude magnesite from \$6.25 to \$10 per ton. Practically all of the duties in the chemical and metal schedules, except those on the proposed dye embargo, potash, lead, zinc and barytes were adopted by the Senate. The Senate Finance Committee has decided to recommend in lieu of five year duties on potash, a bounty to American producers equal to the tariff.

A threat of government operation of mines to meet current coal needs was made during a debate on the coal situation in the Senate. The Senators are impatient over the continuance of the strike and declared that unless it is settled in thirty days, the government should take over such mines as might be necessary to meet current needs. It was also urged that the coal operators be investigated by the Senate as to prices, it being charged that the program of Secretary Hoover to limit prices had been taken advantage of by unduly increasing prices. The proposed investigation was withheld pending the outcome of Secretary Hoover's price fixing policy.

SEEKS ACTION ON COAL BILL

Representative Bland, of Indiana, is seeking action by the House on his bill to appoint a commission to conduct an investigation of the coal industry, which bill would also deny the channels of interstate commerce to companies refusing to furnish such commission with detailed information as to mining costs. He introduced a resolution calling for a special rule giving the right of way for consideration of this bill in the House. Up to date, however, the House

Committee on Rules has not acted on the matter.

Disposition of the Muscle Shoals Nitrate plant is now before the House for action, its Committee on Military Affairs having concluded consideration of various lease offers. The committee was widely divided but the majority recommended acceptance of the offer of Henry Ford of Detroit, Michigan, for lease of all of the plant except the Gorgas steam plant. Minority reports recommended acceptance of the Ford offer in entirety and also recognition of the right of the Alabama Power Company to the Gorgas steam plant.

Numerous bills were introduced proposing a Constitutional amendment to prohibit child labor in industry, following the decision of the Supreme Court nullifying child labor taxation. Hearings were held on the subject by the Judiciary Committee but no conclusion reached.

Legislation to abolish the present gold standard and substitute a flexible dollar based on commodity prices was introduced by Representative Goldsborough, Maryland. It proposes that after January 8, 1924, the dollar shall be based on its purchasing power as expressed in commodity prices. He proposes that this value shall be based on prices of not less than 75 or more than 125 commodities, taken in January, March, May, July, September and November by the Bureau of Labor Statistics.

Opposition continued before the House Committee on Judiciary to the bill of Representative Bacharach, New Jersey, which would deprive federal courts of jurisdiction over appeals from orders of any administrative board in any State.

Another bill to establish a decimal system of weights and measures was introduced by Representative Colton of Utah.

The Senate laid aside the tariff bill long enough to pass appropriation bills for the Army and Navy for the year beginning July 1. In committee consideration of the Army bill appropriations were urged for road improvements in Alaska in behalf of the mining industry.

IMPORTANT BILLS REVIEWED IN THIS ISSUE

MINING—

- S. 3684: By Mr. Nicholson. (Placer entries)
 H. R. 11928: By Mr. Newton, Minn. (Placer entries)
 H. R. 11871: By Mr. Taylor, Colo. (Mineral deposits)
 H. R. 11887: By Mr. Colton. (Gilsonite lands)
 H. R. 11889:

OIL—

- H. J. Res. 297: By Mr. Appleby. (Pollution conference, passed by House and Senate.)
 H. R. 11363: By Mr. Mondell. (Royalties to states)

GOLD—

- H. R. 11788: By Mr. Goldsborough. (Goods dollar)

TAXATION—

- H. J. Res. 341: By Mr. Layton. (Income tax)
 H. R. 11789: By Mr. Raker. (State lands)

LABOR—

- H. R. 11956: By Mr. Hull. (Mechanics' wages)
 H. R. 11707: By Mr. Huddleston. (Child labor)
 H. J. Res. 332: By Mr. Perlman. (Child labor)
 H. J. Res. 234: By Mr. Nolan. (Child labor)
 H. J. Res. 340: By Mr. Tague. (Child labor)

WEIGHTS AND MEASURES—

- H. R. 11829: By Mr. Vestal. (Government control)
 H. R. 11723: By Mr. Colton. (Decimal system)

ALASKA—

- H. R. 11905: By Mr. Sutherland. (Supreme Court)

MUSCLE SHOALS—

- H. R. 11903: By Mr. McKenzie. (Lease offers, reported to the House)
 H. R. 11803: By Mr. Morin. (Federal Chemical Corporation)
 H. R. 11886: By Mr. Wright. } (Lease offers)
 H. R. 11904: By Mr. Almon. }

TRANSPORTATION—

- S. 3217: By Mr. Jones, Washington. (Ship subsidy)
 H. R. 10644: By Mr. Greene, Massachusetts. (Ship subsidy; reported to the House)
 H. R. 11674: By Mr. Winslow. (Cape Cod Canal; reported to the House)

EXPOSITION—

- H. J. Res. 170: By Mr. Bland, Indiana. (Independence celebration)

Representative Layton, Delaware, introduced a resolution proposing a Constitutional amendment prohibiting taxes on income or other direct taxes except to defray expenses of war.

OIL PRICE INVESTIGATION

A subcommittee of the Senate Committee on Manufactures is investigating the relation of crude oil and gasoline prices to determine, if possible, why gasoline prices should have recently increased, notwithstanding crude oil prices have declined.

President Harding, in a special message to Congress, transmitting a detailed explanation of the policies of the Interior and Navy Departments concerning the leases of Naval petroleum reserves, declared that the action of these departments in this matter has been with his entire approval as he was aware in advance of the action taken. Secretary of the Interior Fall in an extensive report on the Naval reserves substantiates his claim that the leases in the Wyoming field were necessary to prevent drainage by outside wells on reports of the Bureau of Mines to the effect that the area is subject to such drainage. He points out that although large areas of petroleum lands have been withdrawn by the government, Congress has not given direct approval to such withdrawals.

The appropriation bill for the Department of Justice for the year beginning July 1, passed by Congress and approved

by the President, stipulates that no part of the \$225,000 allotted for enforcement of anti-trust laws shall be used in the prosecution of any organization or individual for entering into any combination having in view the increasing of wages, shortening of hours, bettering conditions of labor or for any action done in furtherance thereof not in itself illegal.

Some uncertainty exists as to the effect of this provision in view of the recent decision of the Supreme Court in the Coronado Coal Company case in which it was held that labor organizations are suable under sections 7 and 8 of the Anti-Trust act.

OIL POLLUTION BILL

The House and Senate passed a resolution of Representative Appleby, New Jersey, requesting the President to call a conference of maritime nations with a view of adopting means to prevent pollution of navigable waters by oil burning and oil carrying vessels.

Disposition of gilsonite, asphaltum, elaterite or other like mineral substances in the former Uncompahgre Indian reservation in Utah, under the mining laws is provided in bills introduced by Representative Colton of Utah.

Because of the pressure of tariff and other legislation, the Senate Committee on Interstate Commerce has deferred until next session consideration of the Blue Sky bill recently passed by the House.

Further hearings on proposed revision

of the mining laws were held by the House Committee on Mines and Mining, but no action has been taken by the committee on the bill. The committee heard H. V. Winchell and B. G. Moulton, who endorsed generally the proposed revision.

To protect mining claimants who were dispossessed by the recent Supreme Court decision in the Red River case, Senator Nicholson, Colorado, and Representative Newton, Minnesota, introduced bills authorizing the lease of such claims in Tillman and Cotton Counties, Okla., which were initiated under placer mining laws prior to February, 1920.

The House passed a resolution approving an exposition of mines and other products to be held in Philadelphia in 1926, in celebration of the 150th anniversary of the Declaration of Independence.

During the month the President approved the law passed by Congress granting appropriations for the Interior Department during the year beginning July 1. This law gives the Bureau of Mines \$1,580,900 and the Geological Survey \$1,450,940, which will permit of continuance of activities covering all phases of the mining industry.

Protection to homesteaders and desert-land entrymen whose lands subsequently show evidences of mineral deposits, is proposed in a bill by Representative Taylor, Colorado. The bill would authorize mineral applicants to secure written consent or waiver of entrymen to mine on

the land under the form of a lease, paying for damages to crops or improvements which may result therefrom.

The Federal Trade Commission transmitted to Congress a report on investments and profits of bituminous coal operators for the past six years, showing an average profit of 15 percent. The Commission reports, however, that the coal companies overvalue their investments by including extensive coal deposits which would last 108 years. The Commission reduced the valuation of 1,126 companies from \$768,000,000 to \$521,250,000, showing an investment of \$3.12 per ton. The Commission's reduction was 23 percent from investments as shown by the companies.

MINING

(Placer Entries)

S. 3684. Introduced by Mr. Nicholson; referred to the Committee on Public Lands. This bill authorizes the Secretary of the Interior to lease to certain persons and corporations, lands in Tillman and Cotton Counties, Oklahoma, belonging to the United States, which were claimed in good faith prior to February 25, 1920, under placer mining laws, but which were invalidated by a recent decision of the Supreme Court to the effect that such lands are not subject to entry under such laws. These lands lie south of the main channel of the Red River and were located under mining laws under the assumption that they were valid. Under this bill, persons making such entries would be entitled to leases to extract oil and gas for a period of twenty years with the right of renewing for successive periods of ten years upon conditions prescribed by the Interior Department. The bill fixes a royalty to the government on oil and gas produced under the leases at 5 percent and restricts the leases to one person or corporation to not more than 2,560 acres. Application for the lease would be necessary to the Interior Department within sixty days from approval of the bill. The bill also provides that after the leases are made the proceeds of oil and gas now held by the receiver of the Supreme Court in the Red River case shall be divided so as to cover the costs of producing oil and gas and the receivers' fee, the government royalties and the balance to the lessee. It is also proposed that 20 percent of the royalties under the leases shall be paid to the State of Oklahoma.

H. R. 11928. Introduced by Mr. Newton, Minn.; referred to the Committee on Public Lands. This is similar to the foregoing.

(Mineral Deposits)

H. R. 11871. Introduced by Mr. Taylor, of Colo.; referred to the Committee

on Public Lands. This bill seeks to protect homestead and desert-land entrymen of public lands, where, subsequent to entry, mineral deposits are embraced in permits or leases, or are otherwise disposed of. It provides as follows:

"That from and after the passage of this act, whenever public land not classified as or known to be valuable for mineral, or the surface thereof, is entered under any of the homestead laws or the desert-land law, the mineral deposit or deposits of the tract shall not be thereafter embraced in any permit, lease, or entry unless and until the applicant for such permit, lease, or entry shall have complied with one of the following conditions:

"(a) If there is no mortgage or deed of trust to a Federal land bank—first, by securing the written consent or waiver of the entryman or patentee; second, by payment to the entryman or patentee of the damages for injury to crops, to tangible improvements and to the land as a farming or grazing unit, if agreement can be reached as to the amount of such damages; or, third, by the execution of a good and sufficient bond or undertaking to the United States for the use and benefit of the entryman or patentee to secure payment of such damages; (b) or if there is a mortgage or deed of trust to a Federal land bank—first, by securing the written consent or waiver of the entryman or patentee and of the bank; second, if agreement can be reached as to the amount of the damages for injury to crops, to tangible improvements and to the land as a farming or grazing unit, by the payment to the bank of the amount of such damages and the claim of the bank shall be reduced by an amount equal to such payment; and if the amount of such damages is in excess of the sum necessary to extinguish the mortgage or deed of trust by the payment of such excess to the patentee or entryman; or, third, by the execution of a good and sufficient bond or undertaking to the United States for the use and benefit of said Federal land bank and of the patentee or entryman to secure the payment of such damages. Such damages may be determined and fixed in an action brought upon the bond or undertaking in a court of competent jurisdiction against the principal and sureties thereon, such bond or undertaking to be in form and in accordance with rules and regulations to be prescribed by the Secretary of the Interior."

(Gilsonite Lands)

H. R. 11887 and H. R. 11889. Introduced by Mr. Colton; referred to the Committee on Public Lands. These bills provide for the location, entry and patenting of lands in the former Uncompahgre Indian Reservation, Utah, con-

taining gilsonite, asphaltum, elaterite, or other like substances. The first bill provides that these lands shall be immediately opened to settlement, location, occupation, and entry under all land laws of the United States according to the character of the lands or of mineral deposits. The second bill provides that these lands shall be sold and disposed of in tracts not exceeding 40 acres or one-quarter of one-quarter of a section upon terms and restrictions as may be prescribed by Presidential proclamation issued not less than 120 days after the passage of the act and not less than 90 days before the time of sale or disposal.

(Exposition)

H. J. Res. 170. Passed by the House. This resolution gives government approval to the national and international exhibition to be held in Philadelphia in 1926, in celebration of the 150th anniversary of the signing of the Declaration of Independence. It will exhibit the progress of the United States in art, science, industry, commerce and in development of the products of mines, etc.

OIL

(Pollution Conference)

H. J. Res. 297. Introduced by Mr. Appleby. Passed by the House and Senate. This resolution requests the President to call a conference of maritime nations with a view to the adoption of effective means for the prevention of pollution of navigable waters by oil-burning and oil-carrying steamers by the dumping into such waters of fuel oil and oil waste.

(Royalties to States)

H. R. 11363. Introduced by Mr. Mondell; reported by the Committee on Public Lands. This bill would pay to the states 20 percent of royalties and bonuses after its passage received from naval petroleum reserves in the states in which located.

MONETARY

(Gold Values)

H. R. 11788. Introduced by Mr. Goldsborough; referred to the Committee on Banking and Currency. This bill proposes to stabilize the purchasing power of money, and prescribes in detail conditions under which the present gold dollar value shall be replaced after June 8, 1924, by a "variable quantity of standard gold bullion of approximately constant computed purchasing power." It proposes that the quantity of standard gold bullion shall be computed on a basis of index numbers of wholesale prices by the Bureau of Labor Statistics. Computations will be on wholesale prices in Jan-

uary, March, May, July, September and November and the new dollar based thereon will be known as the "goods dollar." Computations would be based on not less than 75 or more than 125 commodities.

TAXATION

(Income Tax)

H. J. Res. 346. Introduced by Mr. Layton; referred to the Committee on Ways and Means. It proposes an amendment to the Constitution providing as follows: "The Congress shall have no power to lay and collect taxes on incomes, or to lay and collect any other direct tax, except to defray the expenses of actual war, and to discharge any debt now existing or thereafter incurred in the prosecution of war."

(State Lands)

H. R. 11789. Introduced by Mr. Raker; referred to the Committee on Public Lands. This bill proposes that the government shall pay the states, in lieu of taxes which the states would otherwise receive, on lands of the United States within the states. It provides that the government shall pay to the states money equivalent to that which states would receive from taxation of lands held by the government in the states, if such lands were owned by individuals. It is provided that lands shall be assessed at a rate not higher than that of other similar lands in the state, and also that the assessed valuation shall not be higher than the tax rate on assessed value of other similar lands in the state. Administration of the law would be under the Secretary of the Interior who would certify to the states the character of all government lands therein, and the payment to the states by the Treasury Department.

LABOR

(Wages)

H. R. 11956. Introduced by Mr. Hull; referred to the Committee on Labor. This bill creates a board to adjust yearly the wages of employes of government navy yards and arsenals. The board will be composed of 12 members of whom six would be chosen by the navy yard employes and three each by the Secretaries of War and Navy. The board would annually establish a fair and reasonable wage for all classes of employes of navy yards and arsenals, effective for one year. In determining wages the board would take into consideration the following conditions:

The maintenance of a standard of living for the worker and his family which will insure health and decency;

The relation between wages and cost of living;

The average change in per capita productivity of manufacturing industries in the United States over a period covering the preceding five years;

The progress made in per capita production in manufactories in the United States since 1900 which has not already been reflected in increased wages;

The training and skill required;

The degree of responsibility; and

Inequalities of increases in wages or of treatment the result of previous wage orders or adjustments.

(Child Labor)

H. R. 11707. Introduced by Mr. Huddleston; referred to the Committee on Interstate Commerce. This bill seeks to regulate interstate commerce in the products of child labor by making it unlawful to place in interstate commerce "any product of any mine or any manufactured article in the production of which the labor of children under fourteen years of age has been used, without notice of such fact being conspicuously placed thereon by tag, marker, or other means." The bill gives the Interstate Commerce Commission authority to adopt regulations thereunder. Violation of the law would subject the offender to a fine of not more than \$1,000 or not more than one year imprisonment, or both.

H. J. Res. 234. Introduced by Mr. Nolan; referred to the Committee on Judiciary. It proposes an amendment to the Constitution giving Congress power to regulate or prohibit throughout the United States the employment of children under eighteen years of age.

H. J. Res. 332. Introduced by Mr. Perlman; referred to the Committee on Judiciary. It proposes an amendment to the Constitution giving Congress power to regulate or prohibit throughout the United States the employment of children under eighteen years of age.

H. J. Res. 340. Introduced by Mr. Tague; referred to the Committee on Judiciary. This bill proposes an amendment to the Constitution providing that Congress shall have power to regulate, limit, or prohibit throughout the United States and all territory subject to the jurisdiction thereof the employment of persons under eighteen years of age.

WEIGHTS AND MEASURES

(Government Control)

H. R. 11829. Introduced by Mr. Vestal; referred to the Committee on Coinage, Weights and Measures. This bill proposes government regulation and control of the manufacture, sale and use of weights and measures and of weighing and measuring devices. It empowers the Bureau of Standards of the Department of Commerce to pass upon each type of weight and measure for use in

trade and commerce and to approve and disapprove of weights and measures. To meet government approval the weights and measures must conform to or give correct results in terms of standard weights and measures and values derived therefrom; must be reasonably permanent in indication and adjustment; and must not facilitate the perpetration of fraud. Upon approval of a type of weight or measure, the Bureau shall issue a certificate to that effect while if a type is disapproved, opportunity would be given to submit a new application for approval. Provision is made for appeal to the Secretary of Commerce from decisions of the Bureau as well as to the Court of Appeals of the District of Columbia whose decision, however, shall be final. It is proposed that the act shall become effective July 1, 1923, but one year thereafter is allowed before the use of the measure or weighing device not approved by the department would be prohibited.

(Decimal System)

H. R. 11733. Introduced by Mr. Colton (by request); referred to the Committee on Coinage, Weights and Measures. This bill proposes to establish a standard decimal system of weights and measures for the United States, which the bill prescribes in detail.

ALASKA

(Supreme Court)

H. R. 11905. Introduced by Mr. Sutherland; referred to the Committee on Judiciary. This bill proposes the establishment of a Supreme Court for Alaska, consisting of a Chief Justice and three associate justices composed of the judges of the District Court of Alaska.

MERCHANT MARINE

(Ship Subsidy)

S. 3217. Introduced by Mr. Jones of Washington; referred to the Committee on Commerce.

H. R. 10644. Introduced by Mr. Greene, of Massachusetts; reported by the Committee on Merchant Marine.

These bills propose a subsidy, based on tonnage, to American ship owners and operators, designed to build up the American merchant marine. Committees held extended hearings thereon, and the President is anxious that Congress shall take action on this matter at this session.

TRANSPORTATION

(Cape Cod Canal)

H. R. 11674. Introduced by Mr. Winslow; reported to the House by the Committee on Interstate Commerce. This bill provides for the purchase by the government of the Cape Cod Canal property, at a cost of \$11,500,000.

NEW CAPITAL STOCK REGULATIONS ISSUED UNDER 1921 LAW

MUCH MISUNDERSTANDING and controversy will be eliminated by the new capital stock tax regulations just issued by the Treasury Department. An attempt has been made to clarify terms and definitions which in the past have given taxpayers considerable trouble.

The basis for the liability of a corporation to the capital stock tax is "carrying on or doing business" in the capacity of a corporation or association. The new Regulations state that no particular amount of business is required in order to bring a company within the terms of the act. "A corporation may complete its organization and sell its capital stock for cash without incurring liability, but other activities, such as entering into contracts for the purchase of property or the construction of a plant are corporate business acts, and constitute doing business. In other words, it is not necessary that a company be actually engaged in the manufacture of its intended product or that it be actually creating profit or gain to incur liability. The making of contracts, buying of materials or machinery, constructing buildings, employing and discharging of individuals are necessary business acts leading to the more profitable end of manufacturing certain products."

The tax is imposed at the rate \$1 for each full \$1,000 of the fair average value of the capital stock in excess of the prescribed deduction of \$5,000, as under the 1918 law. The new regulations, relative to the determination of "fair average value," are more explicit than under former regulations, and are as follows:

"The fair average value of the capital stock for the purpose of determining the amount of the capital stock tax must not be confused with the market value of the shares of stock where it may be necessary to determine such value under other provisions of the revenue laws. The fair average value of the capital stock, the statutory basis of the tax, is not necessarily the book value or the value based on prices realized in current sales of shares of stock or the value determined by capitalization of earnings.

"Form 707 provides Exhibit A for the book or fair value of the assets, Exhibit B for the market value of the shares, and Exhibit C for the value of the capital stock based on the capitalized earnings. All information called for must be given in every case where it is procurable. The fair average value of the capital stock of a corporation and the tax payable thereon shall be determined from a consideration of the data contained in the return as well as all elements and factors affecting values, which should be harmonized so far as possible in the ultimate fair value found. Fair value is required irrespective of the exhibit used or the method employed in its determination.

"EXHIBIT A.—The character of the assets is probably the most important factor in determining the reliability of the value reflected by this exhibit as being indicative of the fair value of the capital stock. If the market value of the assets be established the fair value of the capital stock is held to be not materially less than the fair market value of the net assets. Attempts to average the assets as a means of estimating the fair average value of the capital stock are not permitted.

"EXHIBIT B.—The market is regarded as a factor, but only of importance when the underlying factors upon which the market has been established are sound in all essential particulars.

"EXHIBIT C.—The weight attaching to this exhibit is largely dependent upon the nature of the business and character of the assets.

"In capitalizing the net earnings of the corporation, which should reflect the true earning capacity, the officers should use a rate fairly representing the conditions obtaining in the trade and in the locality, with due regard to other important factors, including the worth of money. But such fair value must not be greatly at variance with the reconstructed book value shown by Exhibit A, unless the corporation is materially affected by extraordinary conditions which support a lower valuation. In any such case a full explanation must accompany the return. The commissioner will estimate the fair value of the capital stock in cases regarded as involving any understatement or undervaluation.

"The fair value of the capital stock, as provided under section 1000 (a) (1) of the Revenue Act of 1921, and invested capital under the excess-profits tax provisions of the Revenue Act of 1921 are not necessarily the same.

"For the purpose of capital-stock tax the fair value of the capital stock is estimated, and is predicated on present values, including actual appreciation of property, whether realized or unrealized, and such intangible assets as good will, trade-marks, and patents to the extent reflected by the earning power, whereas, for the purpose of excess-profits tax, the invested capital is based upon the actual investment of the stockholders in the corporation, irrespective of the present value of its assets. In the case of the capital-stock tax the fair value looks to the present net value of the assets, irrespective of the amount of the investment of the stockholders."

Every domestic corporation, including

so-called subsidiaries, personal service corporations and those which the law may indicate are exempt from tax, must make a return on or before the 31st day of July to the collector of the district in which its principal place of business is located. The term "corporation" includes associations and joint stock companies, whether created by statute or by contract, but not partnerships, properly so-called. The regulations relating to exemptions, foreign corporations, penalties, etc., are substantially the same as those for prior years.

CHANGES IN USE OF EXPLOSIVES IN COAL MINING

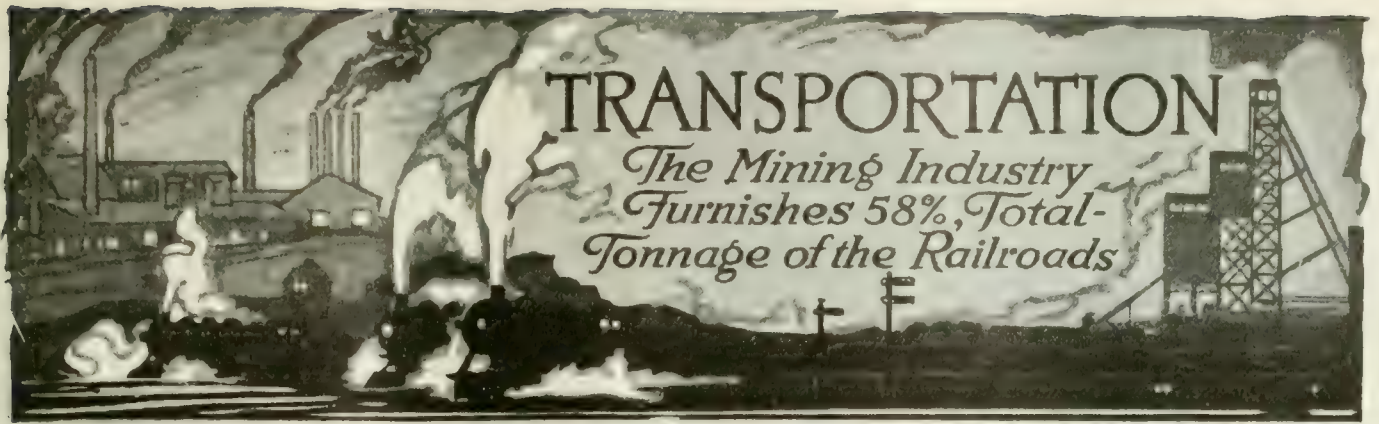
COAL MINING companies are rapidly substituting permissible explosives for other classes of high explosives and for black blasting powder, according to the Bureau of Mines. By so doing they are rendering valuable aid to the nationwide effort to make mining a safer occupation for the 750,000 men employed in American coal mines. In 1912, just ten years ago, only 8 percent of the explosives used at coal mines was of the permissible class; in 1921 the percentage had increased to 18; and in March, 1922, it was 21.

J. E. Tiffany, assistant explosives engineer of the bureau, now in Europe, has been authorized by the Secretary of the Interior to inspect the mining and explosives experimental stations in England, in order to compare their methods of testing with those used in the United States. Mr. Tiffany will also study the use of permitted explosives in British coal mines.

Two series of studies have been undertaken at Pittsburgh, Pa., by the bureau in connection with electrical shot firing methods in mines. The first problem is the relative danger of firing shots with iron and copper "leg" electric detonators, which has a possible bearing on the mine fires reported in the Utah field. The second problem is the cause of mis-fires in the firing of a large number of series shots by push-down type blasting machines in places where the leakage current through the earth is excessive.

GASOLINE TRANSPORTATION HAZARDS

RESULTS of a study of the hazards involved in the transportation of natural gas gasoline, made by the Bureau of Mines, in cooperation with the Association of Natural Gasoline Manufacturers and the Bureau of Explosives, are given in a report by D. B. Dow, chemical engineer of the Bureau of Mines, which is now being distributed by the Association of Natural Gasoline Manufacturers, 821 Mayo Building, Tulsa, Okla. The investigation was undertaken at the request of the Interstate Commerce Commission.



FREIGHT RATE REDUCTION AMOUNTS TO ONLY SIX PER CENT IN OPINION OF AUTHORITIES

By C. H. FARRELL

Since announcement was made by the Interstate Commerce Commission that all rates would be reduced on July first by approximately ten percent there has been a great deal of speculation as to what this would mean to the carriers in dollars and cents and there have been numerous estimates made by all concerned. In an article recently published and signed by Dr. Parmelee, Director of the Bureau of Railway Economics, it is stated that the new rates will bring about a reduction in railway freight revenue of approximately \$240,000,000. It is further stated that the total reduction in the freight bill of the country since 1920 will approximate \$440,000,000, \$200,000,000 of which has been brought about by reductions made since the general increase of 1920.

Dr. Parmelee finds that the level of rates after July 1st will be approximately 11 percent lower than it was after the increases of 1920 were applied. Of this 11 percent only 6 percent will be brought about by the decision just rendered, because the carriers have already by voluntary reductions and by compliance with opinions of the Commission in specific cases reduced their revenues 5 percent.

The Bureau of Railway Economics has at its disposal more authoritative data on railroad matters than any other organization in the United States, not excluding the Interstate Commerce Commission, and its figures are generally relied upon by all concerned. It is, therefore, evident that the reduction recently ordered by the Commission and hailed by writers generally as a 10 percent reduction is in reality only 6 percent from the present level of rates, and taken together with all reductions made since August 26, 1920, either voluntary or by orders of the Commission, it amounts to 11 percent of the basis put into effect in August, 1920, or approximately \$440,000,000.

REDUCED RATES ON IRON ORE—Following its opinion in the proceeding

known as Reduced Rates, 1922, the Commission has issued a supplemental report finding that the rates exacted for the transportation of iron ore from ranges in Minnesota, Wisconsin and Michigan to Lake Superior and Upper Lake Michigan ports will be, on and after July 1, 1922, unjust and unreasonable to the extent that they may exceed 90 percent of the existing rates.

The first opinion of the Commission required that all rates which were increased by authority of the proceeding known as Increased Rates, 1920, should be reduced by specific amounts, but the rates on iron ore were not included because the Commission in its report in 1920 concluded that no increases were justified at that time. The second opinion gives to iron ore shippers approximately the same reduction as other commodities were afforded in the original opinion.

RAILWAY WAGES—The United States Railroad Labor Board has, from time to time during the past month, announced various decisions which are estimated to result in reductions in wages of something over a million railway employes and to amount in one year to approximately \$140,000,000. Following as they did the decision of the Interstate Commerce Commission requiring reduced rates, it is important to note that more than half of the revenue which the carriers expect to lose will be made up by these reductions in wages. With a normal resumption of traffic it is not improbable that the other half of the reduction required by the Commission will be made up by the revenue from increased tonnage, and consequently the predictions and expressed fears of the Railway Executives will probably not be fulfilled. However, that is another story.

The various unions affected by the latest wage reductions are at this writing taking a strike ballot, and the news-

papers indicate from day to day that approximately 95 percent of all the men concerned are in favor of a walk-out. Once again we are faced with the threat of a tie-up in transportation, and this time we are told that the miners' unions will affiliate with the railroads for the purpose of forcing the public to its knees. When the threatened strike was averted in October of last year it was stated in these columns that no real settlement had been made and that the action taken at that time merely postponed the inevitable clash. Once again we express the opinion that there will be no general tie-up of the railroads of this country, although some of the unions may take their men out and we may have a situation similar to the one brought about by the switchmen's strike in the spring of 1920. As is usual in these crises, there is a loophole. The carriers have, since the termination of Federal control, contracted with outside shops for a large amount of their repair and construction work, and the unions are very much opposed to this practice. The Commission has investigated and reported unfavorably in some instances, but the carriers are still of the opinion that they are within their legal rights. It is quite possible that this practice will nevertheless be discontinued, and if it is the unions will hail such a step as a victory.

Meanwhile, the employes will have to make their fight with the knowledge that the new wages prescribed for them by the Labor Board are much higher than those in effect when Federal control terminated and much higher than those paid for similar work in other industries.

COAL MINE RATINGS—The Commission has just announced a general investigation for the purpose of establishing just and reasonable rules, regulations and practices of all carriers in the country with respect to the distribution of cars to coal mines other than anthracite, for coal loading, and the ratings of such mines as

the basis for the distribution of cars thereto.

This question has been the subject of numerous investigations, and at the present time the Car Service Division of the American Railway Association has in effect a set of rules and regulations which is very similar to the one inherited from the Railroad Administration. That organization, however, has submitted to the Commission a proposed revision of its rules, and representatives of the National Coal Association have joined with the Car Service Division in recommending the revision, although this organization does not agree, in every instance, that the rules proposed embody all that it might desire.

The investigation now being conducted by the Commission, known as "In Re Distribution among Coal Mines of Privately Owned Cars and Cars for Railroad Fuel," has been consolidated with this new investigation, and the initial hearing will be held in Washington before Commissioner Aitchison, at 9 o'clock A. M., on July 17.

CLAIMS AGAINST THE RAILROAD ADMINISTRATION—The General Solicitor of the Railroad Administration has issued a circular calling attention to the importance of so handling claims of all kinds in favor of the Director General as to prevent the running of any applicable state or Federal Statute of Limitations. This circular is addressed to all the carriers who were under Federal control, and asks them to forward to the General Solicitor, for advice, any claims regarding which there is any doubt. The circular concludes with the assertion that the cooperation of all carriers and officials is expected.

VALUATION—The original act, passed in 1913, directing the Interstate Commerce Commission to make a valuation of all the property of the railroads in this country, required, among other things, that the Commission find the present cost of acquisition of all railroad lands. After some years of study the Commission came to the conclusion that this value would be a highly speculative one and would represent nothing definite after it was acquired. It was also quite apparent that it would cost a great deal of money to establish anything resembling this fictitious value. The Commission at first attempted to evade this provision by showing the courts that it had no real bearing upon the final result. The courts, however, held that the law should be carried out as enacted. The next step was the amendment which takes from the Commission the necessity of finding this alleged value.

This enactment is of immense importance to the public who are paying the

freight bill because rates will ultimately be made upon the valuation of the properties, and the carriers are, of course, determined to have included in that valuation every possible element of cost. It was stated in Congress that this re-acquisition cost would probably add \$1,000,000,000 to railroad land value, making, of course, a substantial difference in the amount upon which the shippers would have to pay a fair return.

DRILL STEEL SURVEY REPORT

A progress report to members of the Advisory Board to the Bureau of Mines and the Bureau of Standards on the breakage and heat treatment of rock drill steels and other steels and alloys subjected to similar impact stresses has been made by Dr. H. Foster Bain, Director of the Bureau of Mines, and Dr. S. W. Stratton, Director of the Bureau of Standards, covering the month of April.

On April 1, a survey was begun to determine the present status of the types and sizes of drills as related to the heat treatment and breakage of rock drill steels. Up to May 1, the following-named mines were visited by Messrs. F. B. Foley and H. S. Burnholz, metallurgists of the Bureau of Standards, the Osceola, Ahmeek, and Isle Royal mines of the Calumet and Hecla Company; the Champion mine of the Copper Range Company; the Mesabi Iron Company mine; the Ray Consolidated Copper Company mine; the Copper Queen mine of the Phelps Dodge Corporation; and mines of the Calumet and Arizona Company, the Inspiration and Consolidated Copper Company, the Old Dominion Company, and the Miami Copper Company.

NEW LOADING DEVICES

KEEPING PACE with the constant succession of innovations in underground loading devices intended for use in metal mines is furnishing a real task for Bureau of Mines' investigators who are charged with the duty of compiling reports on actual operating performances of the new apparatus.

Much data of interest is contained in a report recently issued by the bureau covering in detail the manner in which the latest types of underground loading machinery adapt themselves to various conditions. It is pointed out that the adaptability of a machine to a particular work depends not only upon the construction of the machine but also upon the ability of the operator to handle the apparatus efficiently.

REPORT ON USE OF TROOPS IN MINE LABOR TROUBLES

IN REPORTING to Congress the occasions upon which soldiers have been used for duty in connection with labor disputes, the War Department has cited the following instances relating to industrial troubles within the mining industry: Treadwell, Alaska, 1907 and 08; Trinidad and other Colo. mining districts, 1914; Perry Creek, Ark., 1914; guarding and preserving order at the lead and zinc mines at Flat River, Mo., 1918; Jerome, Ariz., 1918; Butte, Mont., 1919; steel strike at Gary, Ind., 1919; Charleston, Beckley and Clothier, W. Va., and strikes in Wyoming, Utah, Brownsville, Pa., Bayne, Wash., and Pittsburgh, Kans., in 1919; Gallup and Raton, N. H., and McAllister, Okla., 1919; W. Va., 1920 and disorders in the W. Va. coal region, 1921.

RADIO SUGGESTED AS ADAPTABLE TO MINE RESCUE WORK

POSSIBILITIES of wireless telephone in connection with mine-safety and mine-rescue work has been suggested to the Bureau of Mines. The suggestion has been made that, by use of high-power sending station at the bureau's experiment stations at Pittsburgh, Pa., and Salt Lake City, Utah, messages could be broadcasted to the various mine safety offices and cars stationed throughout the country. Mine-safety programs and instructions could be sent to the various chapters of the Joseph A. Holmes Safety Association, located in the different mining centers. Aerials have been installed on trains in Germany, and it is pointed out that it would be entirely possible to build similar aerials on the mine-rescue cars of the bureau. Field engineers of the bureau have reported that the radio is already in wide use in the different mining centers.

NEW GAS MASK DEVELOPED

PROOF that a special type of oxygen breathing apparatus designed especially for Navy use will furnish practical protection for long periods against dangerous gases is found in the results of recently completed Government tests. It has been shown that the new apparatus can be depended upon to furnish the wearer with untainted air during half an hour of continuous work in gas-laden atmospheres, such as often exist in holds of ships when men who have been overcome must be rescued or repair work carried on. The apparatus was devised, at the Navy's request, by George S. McCaa, a mine safety engineer of the Bureau of Mines.

WIDE RANGE OF SUBJECTS PRESENTED IN LIST OF BUREAU OF MINES STUDIES

IN ORDER to present to the public more promptly the results of its scientific investigations, the Bureau of Mines issues a series of brief mimeographed Reports of Investigations as an adjunct to the printed publications. Besides affording a medium of prompt publication of information, these reports provide a vehicle for the publication of briefer material which would hardly justify issuance in the form of printed bulletins. These reports deal with major metals, minor and rare metals, non-metallic minerals, petroleum, gasoline, coal, coke, safety, sanitation, mine accidents and other subjects. The reports are mailed free to interested applicants as long as the editions are available.

The following is a list of subjects of the bureau's investigations. Many of these studies have been completed, and reports now are available. Others are still in the hands of the bureau's engineers, while the remainder are awaiting compilation of data to be issued in reports. Information concerning any of the studies may be obtained upon application to the Washington office of the bureau.

- Acid Mine Water
Alabama Coal Sampling and Analyses
Alaska, Service Work in
Alaskan Coal and Metal Mining Conditions
Alaskan Lignite, Utilization of
Alloy Castings, Aluminum, Cracks in
Alloy Melting Furnaces, Aluminum, Iron Pots for Alloying Elements in Steel, Use of the Rarer Metals as
Alloys, Aluminum, Contraction in Volume of
Alloys, Aluminum, Deoxidation of
Alloys, Aluminum, Determination of Aluminum Oxide in
Alloys, Aluminum, Fluxes for
Alloys, Aluminum, Manufacture, Properties and Uses of
Alloys, Aluminum, Melting Practice for
Alloys, Copper
Alloys, Non-Ferrous, Cerium in
Alumina and Potash from Low Grade Alunite, Extraction of
Aluminum-Alloy Castings, Cracks in
Aluminum-Alloy Melting Furnaces, Iron Pots for Aluminum Alloys, Contraction in Volume of Aluminum Alloys, Manufacture, Properties and Uses of
Aluminum and Aluminum Alloys, Fluxes for Aluminum and Aluminum Alloys, Deoxidation of Aluminum and Aluminum Alloy Melting Practice
Aluminum, Direct Determination of
Aluminum, Effect of Various Gases on
Aluminum Foundry Practice, Pyrometry in
Aluminum-Melting Furnaces, Gas Atmospheres in Aluminum Oxide, Determination of, in Aluminum and Aluminum Alloys
Aluminum Pig, Effect of Quality of as Related to Sand Casting Practice
Alunite, Low Grade, Potash and Alumina from American Engineering Standards Committee
Ammonium Nitrate
Analyses of Coal, Laboratory Work on
Analyses of Coal, Publications on
Analyses and Sampling of Coal in Alabama
Analyses and Sampling of Coal in Utah
Analyses and Sampling of Coal, Series by States
Analytical Distillation of Petroleum
Anthracite Losses in Underground Operations
Antimony Leaching and Electrolysis
Arizona Copper Company and Shannon Copper Company, Sulphur Dioxide Leaching in Cooperation with
Ash, Coal, Fusibility of
Assaying and Mineral Identification
Atmospheres in the Coal Mines of Illinois and Indiana
Atmospheric Conditions in Tunnels, Physiological Effects of
Aventurine Glaze Investigation
Bentonite Investigation
Bituminous Coal Miners, Causes of Death Among Blast Furnace, Experimental
Blast Furnace Operation, Effect of Furnace Lines on
Blast Furnace Operation, Effect of Physical Characteristics of the Charge on
Blast Furnace, Performance Tests of Coke in
Blood, Determination of the Practicability of using Carbon Dioxide and Oxygen Mixture for Eliminating Carbon Monoxide from
Blood, Determination of the Practicability of Monoxide in
Boghead Coals, Cannel Coals, Coals and Oil Shales, Origin, Composition and Chemistry of
Boulders in Hydraulic Mining, Handling of
Brass Furnace Practice, Electric
Brick, Fire, for Malleable Furnace Bungs
Brick Opportunities of the Pacific Northwest, Refractory
Briquetting Zinc-Bearing Material for Distillation
Burkhardt Oil Field Investigation
Burners, Low Pressure, Investigation of
Burning Problems, Cooperative Work on Industrial
- By-Product Coke and Its Utilization, Study of Calcination Temperature, Low, Effect of, on the Properties of Georgia Kaolins
Cannel Coals, Boghead Coals, Coals and Oil Shales, Origin, Composition and Chemistry of
Carbon Dioxide and Oxygen Mixture for Elimination of Carbon Monoxide from the Blood, Use of Carbon Dioxide Gas in the East Tintic District, Utah
Carbon Monoxide from the Blood, Determination of the Practicability of the Use of Carbon Dioxide and Oxygen Mixture for Eliminating Carbon Monoxide from Internal Combustion Engines in Tunnels, Diffusion of
Carbon Monoxide in Blood, Quantitative Determination of
Carbon Monoxide, Physiological Effects of
Carbon Monoxide, Schedule for Testing and Approving Gas Masks for
Carbon Steel, Influence of Rate of Cooling upon Physical Properties of
Carburization in Tubes of Oil Stills, Effects of Casinghead Gasoline Blends, Study of
Casting Practice, Sands, Effect of Quality of Aluminum Pig as Related to
Castings, Aluminum-Alloy, Cracks in
Cement, Magnesite, for Fire-Proofing Timbers
Cements, Dolomite
Central of Georgia Railway, Cooperative Work with
Ceramic Bodies, Effect of Firing Temperatures on the Strength of
Ceramic Industry of Pacific Northwest, Contact and Cooperation with
Ceramic Materials and Clays
Ceramic Ware, Firing of
Cerium in Non-Ferrous Alloys
Cerium in Steel, Use of as an Alloying Element
Chloride Volatilization at Salt Lake City, Utah
Chloride Volatilization Fume, Use of Electric Furnace for Reducing
Chloride Volatilization, Fundamental Chemistry of Churn Drills, Heat Treatment of
Clay Particles, Sedimentation as a Means of Classifying
Clay, White, Investigation of
Clays and Other Ceramic Materials
Clays of Georgia
Clays of Ohio, Fire
Clays of Washington, Preliminary Survey of
Clays, Purification of
Coal Analyses, Laboratory Work on
Coal Analyses, Publications on
Coal and Iron Situation in Europe Resulting from the War
Coal and Metal Mining Conditions in Alaska
Coal and Oil, Destructive Distillation of Mixtures of
Coal Ash, Fusibility of
Coal Dust, Explosibility of (Experimental Mine)
Coal Dust, Explosibility of (Laboratory)
Coal Dust Explosion Hazards in Coal Mines
Coal Dust Explosion Hazards in Industrial Plants
Coal, Heat of Distillation of
Coal, Iron and Potash Mining Methods in Europe
Coal Mine Atmospheres in Illinois and Indiana
Coal Mine Explosions
Coal Mine Fires
Coal Mine Sampling
Coal Mines, Steel and Iron Plants of France, Destruction and Rehabilitation of
Coal Mining Methods
Coal Mining Problems
Coal Processing to Super Power Plants, Relation of
Coal Sampling and Analyses in Alabama
Coal Sampling and Analyses in Utah
Coal Sampling and Analyses, Series by States
Coal Sampling Apparatus, Development of
Coal Seams of the Intermountain Country, Methods of Extracting Pillars in
Coal, Unsaturated Hydrocarbons from Destructive Distillation of
Coal Washing at Urbana, Illinois
- Coal Washing, Float and Sink Method of
Coal Washing of Pacific Northwest and Alaska Coals
Coals, Cannel Coals, Boghead Coals and Oil Shales, Origin, Composition and Chemistry of
Coals, Specific Gravity Studies of
Codes, Mechanical Mine Safety, Preparation of
Codes, Safety, Preparation of Electrical
Coke, By-Product, Study of Utilization of
Coke in the Blast Furnace, Performance Tests on
Coke, Physical Testing of
Coke, Sulphur in, Physico-Chemical Study of
Cold Water Thawing
Combustion and Heat Transmission in Small Cast Iron Domestic Boiler
Combustion of Trinitrotoluene, Products of
Complex and Low Grade Ores, Recovery by Chloride Volatilization of Silver, Lead and Copper Ores from
Concentration of Copper Ores
Copper Alloys
Copper from Sulphate Solutions, Precipitating
Copper Mines in Michigan, Ventilation of
Copper Ores, Concentration of
Copper Ores, Treatment of
Copper, Silver and Lead, Recovery of, from Low Grade and Complex Ores by Chloride Volatilization
Copper Sulphate Solutions, Purification of
Corrosive Action on Metal of Acid Mine Water
Cracking Tars and Heavy Oils
Crucibles, Graphite, Investigation of
Crude Oil Evaporation Losses
Crude Oil Samples in Salt Creek Field, Collection of
Crude Petroleum, Examination of American
Crudes, Mid-Continent, Production of Lubricating Oils from
Crushing Strength of Coal and Supports
Cryogenic Research Laboratory
Cyanide, Hydrogen, Tests for
Deaner Pool, Development Work in
Death Among Bituminous Coal Miners, Causes of
Deoxidation of Aluminum and Aluminum Alloys
Detonators, Fixing the Standard of Strength of Different Grades of
Development Problems, Oil Field
Development Work in Slick Pool
Disasters, Mine, Caused by Electrical Equipment
Disasters, Mine, Investigation of
Diseases of Miners, Rock Dust in Relation to Pulmonary
Distillation, Briquetting Zinc-Bearing Material for
Distillation of Coal, Destructive, Unsaturated Hydrocarbons from
Distillation of Coal, Heat of
Distillation of Mixtures of Oil and Coal
Distillation of Petroleum, Analytical
Dolomite Cements
Dolomite Investigation
Drift Placer Mining, Mechanical Handling of
Gravel in
Drill Steel and Rock Drilling Investigation in the Joplin District
Dust and Ventilation Conditions in California
Lode Deep Gold Mines, Physiological Effects of
Dust, Coal, Explosibility of (Experimental Mine)
Dust, Coal, Explosibility of (Laboratory)
Dust, Coal, Explosion Hazards in Coal Mines
Dust, Coal, Explosion Hazards in Industrial Plants
Dust in Mines
Dust, Rock, in Relation to Pulmonary Diseases of Miners
East Tintic District, Utah, Investigation of Carbon Dioxide Gas in
Eastland County, Texas, Investigation of Water Problems in
El Dorado, Arkansas, Investigation of Conditions in the New Oil Field at
Electric and Flame Safety Lamps Used for Illumination in Mines, Investigation of the Safety of
Electric Brass Furnace Practice
Electric Furnace for Heating Super-Refractory Shapes
Electric Furnace for Reducing Chloride Volatilization Fume
Electrical Equipment Used for Shot Firing in Mines, Investigation of the Safety of
Electrical Equipment Used in Connection with Drainage and in the Preparation and Haulage of Coal in Gaseous Mines, Investigation of the Safety of
Electrical Equipment, Reporting of Mine Disasters Caused by
Electrical Methods, Investigation of
Electrical Resistivities of Granular and Molded Resistors
Electrical Safety Codes, Preparation of
Electrolysis and Leaching of Antimony
Electrothermic Metallurgy of Zinc
European Coal and Iron Situation Resulting from the War
European Mining Methods, Coal, Iron and Potash
Evaluation Section, Oil and Gas, of the Internal Revenue Bureau, Cooperation with
Evaporation Losses of Crude Oil
Evaporation Losses, Practical Methods for Saving

Exhaust Gases from Motor Vehicles, Amount and Composition of
 Explosibility of Coal Dust (Experimental Mine)
 Explosibility of Coal Dust (Laboratory)
 Explosion Hazards in Coal Mines, Coal Dust
 Explosions Caused by the Use and Handling of Explosives in Industrial Operations, Investigation of
 Explosion Hazards from Coal Dust in Industrial Plants
 Explosions, Coal Mine
 Explosive Vapors in Oil Bunkers, Detection of Explosives, Investigation of Suitability Tests of Industrial
 Explosives, Liquid Oxygen
 Explosives in Metal Mines, Tests of
 Explosives, Investigation of Outrages with
 Explosives, Military, Tests of
 Explosives, Military, Application of to Commercial Purposes
 Explosives, Permissible
 Explosives, Physical Tests of
 Permissible Explosives
 Water Resisting Properties of Explosives
 Products of Combustion of TNT
 Investigations of Explosions in the Use and Handling of Explosives in Industrial Operations
 Sensitiveness of Explosives to Frictional Impact
 Investigation of Suitability Tests of Industrial Explosives
 Ammonium Nitrate
 Tests of Military Explosives
 Application of Military Explosives to Commercial Purposes
 Investigations of Outrages with Explosives
 Neumann Bands in Mild Steel
 Explosives, Sensitiveness of to Frictional Impact
 Explosives, Water Resisting Properties of
 Feldspar Investigation
 Fillers, Mineral
 Fire Brick for Malleable Furnace Bungs
 Fire Clays of Ohio
 Fire Extinguishers in Mines
 Fire Investigation at the Sunnyside Mine, Utah
 Fire-Proofing Timbers, Use of Magnesite Cement for
 Fires, Coal Mine
 Firing of Ceramic Ware
 Firing Temperatures, Effects of on the Strength of Ceramic Bodies
 Flame and Electric Safety Lamps Used for Illumination in Mines, Investigation of the Safety of
 Float and Sink Method of Cleaning Coal
 Flotation, Theory of
 Fluxes for Aluminum and Aluminum Alloys
 Foundry Practice, Aluminum, Pyrometry in
 Fractionating Towers, Study of
 French Coal Mines, Steel and Iron Plants, Destruction and Rehabilitation of
 Frozen Ground, Thawing of with Cold Water
 Fuel Inspection Systems
 Fume, Chloride Volatilization, Use of Electric Furnace for Reducing
 Furnace Blast, Experimental
 Furnace Blast, Performance Tests of Coke in
 Furnace Bungs, Malleable, Fire Brick for
 Furnace Lines on Blast Furnace Operation, Effect of
 Furnace Operation, Blast, Effect of Physical Characteristics of the Charge on
 Furnace Practice, Electric Brass
 Furnaces, Aluminum-Alloy Melting, Iron Pots for
 Furnaces, Aluminum Melting, Gas Atmospheres in
 Fusibility of Coal Ash
 Gas Atmospheres in Aluminum Melting Furnaces
 Gas, Carbon Dioxide, in the East Trinitic District, Utah
 Gas Field Investigation, Monroe
 Gas Manufacturing, Studies
 Gas Mask, Development of a Universal
 Gas Masks for Carbon Monoxide, Schedule for Testing and Approval
 Gas Masks for Use in Gasoline and Petroleum Tanks
 Gas Masks in Railroad Tunnels, Use of
 Gas, Natural, Conservation of
 Gas, Natural, for Smelting Zinc Ores, Use of
 Gas, Removal of Sulphur from
 Gaseous Mines, Investigation of the Safety of
 Electrical Equipment Used in Connection with
 Drainage and in the Preparation and Haulage of Coal in
 Gases and Respirators, Mine and Industrial
 Gases, Effect of, on Aluminum
 Gases, Exhaust, from Motor Vehicles, Amount and Composition of
 Gases for Reduction of Iron Oxides
 Gases, Rare
 Gasoline and Petroleum Tanks, Gas Masks for Use in
 Gasoline Blends, Casing Head, Study of
 Gasoline from Still Vapors, Recovery of
 Gasoline Production, Natural Gas
 Gasoline Sold Throughout the Country, Survey of
 General Inquiries on Minerals
 Geophone for Mine Use
 Georgia, Central of, Cooperative Work with
 Georgia Clays
 Georgia Kaolins, Effect of Low Calcination Temperature on the Properties of
 Glaze Investigation, Aventurine
 Gold Losses in Sluicing Placer Gravels, Prevention of

Goodsprings, Nevada, Chloride Volatilization Tests at
 Graphite Crucible Investigation
 Gravel in Drift Placer Mining, Mechanical Handling of
 Gravels, Placer, Prevention of Gold Losses in Sluicing
 Gravimetric Method for Determining Sediment in Petroleum Products
 Gunite in Metal Mines, Use of
 Harbor City, Calif., Chloride Volatilization Tests at
 Hazards in Coal Mines from Coal Dust Explosions
 Hazards in Industrial Plants from Coal Dust Explosions
 Health of Miners, High Temperatures and Humidities as Affecting
 Heat of Distillation of Coal
 Heat Transmission and Combustion in a Small Cast Iron Domestic Boiler



E. A. HOLBROOK

Acting Director of the Bureau of Mines, in the absence of Director Bain

Heat Treatment of Churn Drills
 Heat Treatment of Rock Drill Steels
 Heats of Solution of TNT and Picric Acid
 Helium Recovery
 Helium Repurification Cars
 Helium Repurification Plant
 Helium Storage
 Hewitt Field Investigation
 Humidities and Temperatures as Affecting the Health of Miners
 Hydraulic Mining, Handling of Boulders in
 Hydraulic Sand Filling or Stowing Methods in Mining
 Hydrocarbons, Unsaturated, from Destructive Distillation of Coal
 Hydrogen Cyanide, Tests for
 Hydrometallurgical Solutions, Precipitation of Zinc from
 Hydrometallurgy of Rare Metals
 Iceland Spar Investigation
 Industrial Burning Problems, Cooperative Work on
 Inspection Systems, Fuel
 Internal Combustion Engines in Tunnels, Diffusion of Carbon Monoxide from
 Internal Revenue Bureau, Oil and Gas Evaluation Section, Cooperation with
 Iridescent Vapor Lustres
 Iron and Coal Situation in Europe resulting from the War
 Iron and Steel Plants and Coal Mines of France, Destruction and Rehabilitation of
 Iron, Coal and Potash Mining Methods in Europe
 Iron Mines of the Lake Superior District, Organization for Handling Rock Drill, Steel in
 Iron Mining Industry in the Lake Superior District, Administrative Organization in
 Iron Mining Methods in Lake Superior District
 Iron Ore Treatment
 Iron Oxide, Reaction Rate in the Reduction of
 Iron Oxides, Reduction of with Gases
 Iron Pots for Aluminum-Alloy Melting Furnaces
 Iron, Sponge, Melting of
 Iron, Sponge, Preparation of
 Iron, Sponge, Properties of Steel from
 Joplin District, Rock Drilling and Drill Steel Investigation in
 Kaolins, Georgia, Effect of Low Calcination Temperature on the Properties of
 Kilns, Industrial, Cooperative Work on
 Lake Superior District, Administrative Organization of the Iron Mining Industry in
 Lake Superior District, Iron Mining Methods in
 Lake Superior Districts, Medical Organizations in
 Lander Field Investigation
 Leaching and Electrolysis of Antimony
 Leaching of Sulphur Dioxide at Tucson, Arizona
 Leaching of Sulphur Dioxide in Cooperation with Shannon Copper Company and Arizona Copper Company
 Leaching of Sulphur Dioxide in Cooperation with Miami Copper Co.
 Lead Poisoning in the Mines of Utah
 Lead, Silver and Copper, Recovery of, from Low Grade and Complex Ores by Chloride Volatilization
 Leasing Regulations, Mining
 Leasing Regulations in Louisiana, Oil Land, and Investigation of Neighboring Non-Government Properties
 Lignite, Alaskan, Utilization of
 Lignite Investigation
 Liquid Oxygen Explosives
 Loading Devices, Underground
 Louisiana Gas Field Investigation (Monroe Field)
 Louisiana Oil Land Leasing Regulations
 Low Grade and Complex Ores, Recovery by Chloride Volatilization of Silver, Lead and Copper from
 Low Pressure Burners, Investigation of
 Lubricating Oils from Mid-Continent Crudes, Production of
 Lustres, Iridescent Vapor
 Magazine Feed Boiler, Test of a
 Magnesite Cement for Fire-Proofing Timbers
 Malleable Furnace Bungs, Fire Brick for
 Maverick Springs Investigation
 Mechanical Handling of Gravel in Drift Placer Mining
 Mechanical Mine Safety Codes, Preparation of
 Mechanical Safety Devices, Investigation of
 Medical Organizations in the Lake Superior Districts
 Metal Mine Ventilation
 Metal Mines, Cooling Ventilating Currents in
 Metal Mines, Tests of Explosives in
 Metal Mines, Timber Preservatives and Timber Substitutes as Applied in
 Metal Mines, Use of Gunite in
 Metal Mining Conditions in Alaska
 Methane in Mines, Investigation of the Safety of
 Devices for Determining
 Miami Copper Company, Sulphur Dioxide Leaching in Cooperation with
 Microscopic Investigations
 Mid-Continent Crudes, Production of Lubricating Oils from
 Military Explosives, Application of, to Commercial Purposes
 Military Explosives, Tests of
 Mill Operators, Assistance to
 Milling Problems in the Tri-State District
 Mine Disasters Caused by Electrical Equipment
 Mine Disasters, Investigation of
 Mine Operators, Assistance to
 Mineral Fillers
 Mineral Identification and Assaying
 Minerals, General Inquiries on
 Mining Methods, Coal
 Mining Methods, Placer
 Molybdenum
 Molybdenum Steels
 Monroe Gas Field Investigation (Louisiana)
 Motor Vehicles, Amount and Composition of Exhaust Gases from
 Natural Gas Conservation
 Natural Gas for Smelting Zinc Ores, Use of
 Natural Gas Gasoline Production
 Neumann Bands in Mild Steel
 New Oil Field, Arkansas, Investigation of Conditions in
 Nitrate, Ammonium
 Non-Ferrous Alloys, Cerium in
 Ohio Fire Clays
 Oil and Coal, Destructive Distillation of Mixtures of
 Oil & Gas Evaluation Section, Internal Revenue Bureau, Cooperation with
 Oil Bunkers, Detection of Explosive Vapors in
 Oil Field Development Problems
 Oil Field Water Problems
 Oil Reserves
 Oil Shale Investigations
 Oils and Tars, Cracking of
 Oil Stills, Effects of Carburization in Tubes of
 Oil Well Pumping, Equipment for
 Oil Wells, Investigation of Water Injuries to
 Oil Wells, Producing, Investigation of Handling
 Oil Wells, Shooting of
 Operators, Mill, Assistance to
 Operators, Mine, Assistance to
 Ore Dressing Work at Reno, Nevada, for Fiscal Year 1920-1921
 Ore Dressing Work at Reno, Nevada, for Fiscal Year 1921-1922
 Ore Dressing Work at Salt Lake City, Utah
 Oxidation Period

Oxide of Aluminum in Aluminum and Alumina
Alloys, Determination of
Oxide of Iron, Reaction Rate in the Reduction of
Oxides of Iron, Reduction of with Gases
Oxygen Explosives, Liquid
Oxygen Mixture and Carbon Dioxide for Elimination
of Carbon Monoxide from the Blood
Oxygen Removal from Hot Water Systems
Leimissible Explosives
Petroleum, Analytical Distillation of
Petroleum and Gasoline Lamps, Gas Masks for
Use in
Petroleum, Crude, Examination of American
Petroleum Fractions, Physical and Chemical Properties of
Petroleum Fractions, Viscosity Temperature
Curves of
Petroleum Laboratory at Washington, D. C.
Petroleum Products, Gravimetric Method for Determining
Sediment in
Petroleum Products, Methods of Treating
Petroleum Research Problems
Physical Testing of Coke
Physical Tests of Explosives
Physico-Chemical Study of Sulphur in Coke
Physiological Effects of Atmospheric Conditions
in Tunnels, Investigation of
Physiological Effects of Carbon Monoxide
Physiological Effects of Ventilation and Rock Dust
Conditions in Various Mines of the California
Lode Deep Gold Mines
Physiological Effects of Ventilation in the Mines
of the Lake Superior District
Picric Acid and Trinitrotoluene, Heats of Solution
of
Pillars in the High Coal Seams of the Intermountain
Country, Methods of Extracting
Pilot Butte Field
Placer Gravels, Prevention of Gold Losses in
Sluicing
Placer Mining, Drift, Mechanical Handling of
Gravel in
Placer Mining Methods
Platinum
Potash and Alumina from Low Grade Alunite,
Extraction of
Potash, Iron and Coal Mining Methods in Europe
Powdered Coal for Generation of Steam
Precious Metals
Precipitating Copper from Sulphate Solutions
Precipitation of Zinc from Hydrometallurgical
Solutions
Processing of Coal to Superpower Plants, Relation
of
Prospectors, Instruction for
Pulmonary Diseases of Miners, Rock Dust in
Relation to
Pyrometry in Aluminum Foundry Practice
Radium and Uranium Ores
Radium Researches
Rare Gases
Rare Metals, Hydrometallurgy of
Rarer Metals as Alloying Elements in Steel, Use of
Reduction of Fume by Chloride Volatilization
Reduction of Iron Oxide, Reaction Rate in the
Reduction of Iron Oxide with Gases
Refinery Equipment, Study of Efficiency of
Refinery, Experimental, Operation of
Refractory Brick Opportunities of the Pacific
Northwest
Refractory Shapes, Super, Electric Furnace for
Heating
Refractories, Super
Rescue Apparatus, Standardization in the Use of
Mine
Respirators and Gases, Mine and Industrial
Rock Drill Steel in Iron Mines of Lake Superior
District, Organization for Handling
Rock Drill Steels, Heat Treatment of
Rock Drilling and Drill Steel Investigation in the
Joplin District
Rock Dust and Ventilation Conditions in California
Lode Deep Gold Mines, Physiological
Effects of
Rock Dust in Relation to Pulmonary Diseases of
Miners
Rocky Mountain Petroleum Association, Cooperation
with
In Lander Field Investigation
In Maverick Springs Investigation
In Pilot Butte Field Investigation
In Salt Creek Field Investigation
In Sander Field Investigation
Safety Codes, Preparation of Electrical
Safety Codes, Preparation of Mechanical Mine
Safety Devices, Investigation of Mechanical
Safety of Devices for Determining Methane in
Mines, Investigation of
Safety of Electric and Flame Safety Lamps used
for Illumination in Mines, Investigation of
Safety of Electrical Equipment Used for Shot Firing
in Mines, Investigation of
Safety of Electrical Equipment Used in Connection
with Drainage and in the Preparation and
Haulage of Coal in Gaseous Mines, Investigation
of
Salt Creek Field, Collecting Crude Oil Samples in
Sampling and Analyses of Coal in Alabama
Sampling and Analyses of Coal in Utah
Sampling and Analyses of Coal, Series by States
Sampling Apparatus, Development of
Sampling, Coal Mine
Sand-Casting Practice, Effect of Quality of Aluminum
Pig as Related to
Sand Filling or Stowing Methods in Mining,
Hydraulic

Sander Field, Cementing off Water Beebe Well in
Sanitary Survey of Mining Camps in California
and Arizona
Sanitary Survey of Mining Camps in Indiana, Illinois
and Kentucky
Sanitary Survey of Mining Camps in Utah
Sedimentation as a Means of Classifying Extremely
Fine Clay Particles
Service Work in Aniska
Shannon Copper Company and Arizona Copper
Company, Sulphur Dioxide Leaching in Cooperation
with
Shooting of Oil Wells
Shot Firing in Mines, Investigation of the Safety
of Electrical Equipment Used for
Silver, Lead & Copper Recovery from Low Grade
and Complex Ores by Chloride Volatilization
Slate Investigation
Snack Pool, Development Work in
Sluicing Placer Gravels, Prevention of Gold
Losses in
Smelting Zinc Ores, Use of Natural Gas for
Soaking Period of Ceramic Ware
Soapstone and Talc Investigation
Solubility of Trinitrotoluene in Various Solvents
Spar Investigation, Iceland
Specific Gravity Studies of Coals
Sponge Iron, Melting of
Sponge Iron Preparation
Sponge Iron, Properties of Steel from
Standardization in the Use of Mine Rescue Apparatus
Steam, Powdered Coal for Generation of
Steel, Carbon, Influence of Rate of Cooling upon
Physical Properties of
Steel, Drill, and Rock Drilling Investigation in the
Joplin District
Steel and Iron Plants and Coal Mines of France,
Destruction and Rehabilitation of
Steel, Neumann Bands in Mild
Steel from Sponge Iron, Properties of
Steel, Rock Drill, in Iron Mines of the Lake
Superior District, Organization for Handling
Steel, Use of the Rarer Metals as Alloying Elements
in
Steel, Zirconium, for Light Armor
Steels, Molybdenum
Steels, Rock Drill, Heat Treatment of
Stenches as Warning in Mines
Still Vapors, Recovery of Gasoline from
Stills, Oil, Effects of Carburation in Tubes of
Stowing or Sand Filling Methods in Mining,
Hydraulic
Subsidence from Coal Mining in Indiana and Illinois
Sulphate Solutions, Copper, Purification of
Sulphate Solutions, Precipitating Copper from
Sulphur Dioxide Leaching in Cooperation with
Miami Copper Co.
Sulphur Dioxide Leaching at Tucson
Sulphur Dioxide Leaching in Cooperation with
Shannon Copper Company and Arizona Copper
Company
Sulphur from Gas, Removal of
Sulphur in Coal, Forms of
Sulphur in Coke, Physico-Chemical Study of
Sulphur in Fuels
Sulphuric Acid in the Liquid Phase, Investigation
of the Possibility of Making Dilute
Sunnyside Mine Fire, Investigation of
Superpower Plants, Relation of the Processing of
Coal to
Super Refractories
Super Refractory Shapes, Electric Furnace for
Heating
Talc and Soapstone Investigation
Tars and Heavy Oils, Cracking of
Temperatures and Humidities as Affecting the
Health of Miners
Temperatures, Firing, Effects of on the Strength
of Ceramic Bodies
Texas, Investigation of Water Problems in Eastland
County
Texas Oil Field Investigation (Burkburnett)
Thawing of Frozen Ground with Cold Water
Timber Preservatives and Timber Substitutes as
Applied in Metal Mining
Timbers, Magnesite Cement for Fire Proofing
Tintic District, East, Investigation of Carbon
Dioxide Gas in
Treasury Department, Internal Revenue Bureau,
Cooperative Work with, on Oil Reserves
Trent Process
Trinitrotoluene and Picric Acid, Heats of Solution
of
Trinitrotoluene, Deterioration of During Storage
Trinitrotoluene in Various Solvents, Solubility of
Trinitrotoluene, Products of Combustion of
Tri-State District, Milling Problems in
Tunnel Rules and Regulations
Tunnel Ventilation
Tunnels, Diffusion of Carbon Monoxide from Internal
Combustion Engines in
Tunnels, Physiological Effects of Atmospheric Conditions
in
Tunnels, Use of Gas Masks for Use in Railroad
Underground Loading Devices
Underground Operations, Losses of Anthracite in
Uranium and Radium Ores
Vanadium
Vapor Lusters, Iridescent
Ventilating Currents in Metal Mines, Cooling
Ventilation and Rock Dust Conditions in California
Lode Deep Gold Mines, Physiological Effects of

Ventilation in Michigan Copper Mines
Ventilation in the Mines of the Lake Superior
District, Physiological Effects of
Ventilation, Metal Mine
Ventilation, Tunnel
Viscosity Temperature Curves of Petroleum Fractions
Volatilization, Chloride, at Salt Lake City, Utah
Volatilization, Chloride, Fundamental Chemistry
of
Volatilization Fume, Chloride, Use of Electric
Furnace for Reducing
Warning in Mines, Use of Stenches as
Washing Coal at Urbana, Illinois
Washing Coal, Float and Sink Method of
Washing Coal of Pacific Northwest and Alaska
Water, Acid Mine
Water Injuries to Oil Wells, Investigation of
Water Power Resources of Pacific Northwest,
Study of
Water Problems, Investigations of, in Eastland
County, Texas
Water Problems, Oil Field
Water Resisting Properties of Explosives
Wells, Oil, Investigation of Handling Producing
Wells, Oil, Investigation of Water Injuries to
Wells, Oil, Shooting of
White Clay Investigation
Wisconsin Zinc District, Investigation in
Yellow Pine Mining Company, Tests at
Zinc Bearing Material for Distillation, Briquetting
Zinc, Electrothermic Metallurgy of
Zinc from Hydrometallurgical Solutions, Precipitation
of
Zinc in the Wisconsin District, Investigation of
Zinc Ores, Use of Natural Gas for Smelting
Zirconium Steel for Light Armor

INDUSTRIAL NOTES

The Jeffrey Manufacturing Company has issued a bulletin describing a new material handling product, the Jeffrey Belt Conveyor. This conveyor was built universally, the company announces, to meet the demand for a light, durable and inexpensive conveyor for loading and unloading coal, coke, cinders, sand, gravel, crushed stone and similar materials. Operated by either electric motor or gasoline engine, its capacity varies from 20 to 50 tons per hour, depending upon the kind of material handled.

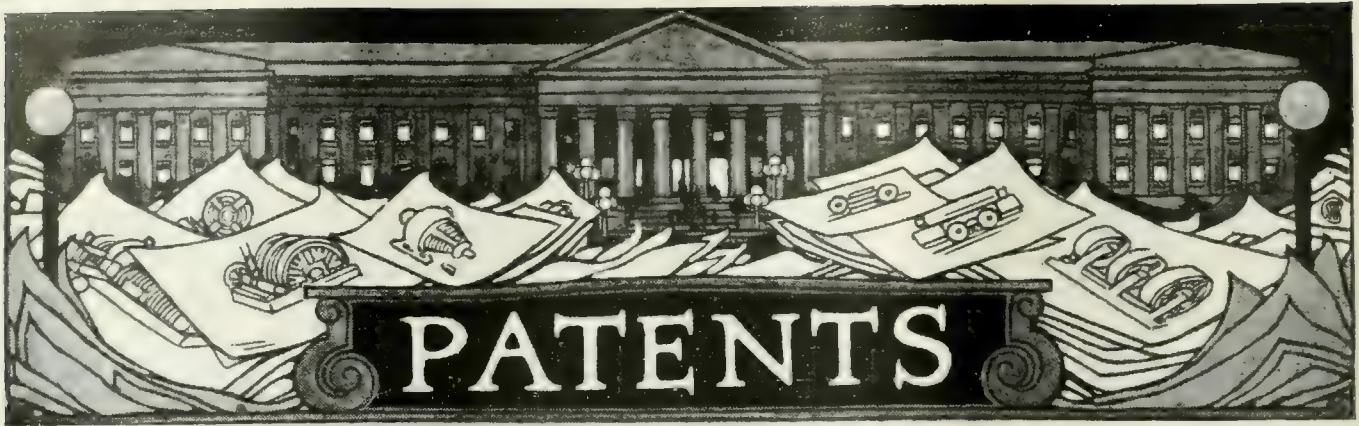
PERSONAL

Charles Enzian, consulting engineer, Finance Building, Philadelphia, announces a special arrangement with an expert with a national reputation in chemical analysis and promotion of efficient fuel utilization whereby this expert's services will be associated with his own work consisting of general engineering practice, specializing services, in examinations, operating analyses and reports on undeveloped and developed coal properties in which he has been engaged during the past twenty-eight years.

PLAN TO USE IDLE COAL LANDS

Utilization of idle coal lands can be effected in a highly efficient manner under a system adopted by the Philadelphia and Reading Coal and Iron Company, wooded areas being worked over in such a manner as to minimize possibilities of forest fires, with no portion of cut timber being allowed to go to waste.

The company is trying to build up public opinion in favor of forest conservation and besides posting fire warning placards liberally in the woods and other places, has been running forest protection ads in the region newspapers. Fire-fighting squads have been organized at all collieries, and boundary lines have been brushed and painted.



1,408,435—*J. S. Beeneck*, Nanticoke, Pa., March 7, 1922.

MINER'S BLASTING BATTERY composed of a number of cells mounted within a casing, which is water proof, the top of the box carrying binding posts for line wires, the connections being such that the cover may be raised or moved aside so that the wires will not cross each other.

1,408,607—*C. A. Kloman*, Bellevue, Pa., March 7, 1922.

COAL CRUSHER comprising a pulverizer in which friction between the pulverizing surfaces is entirely avoided and peculiarly applicable to coal, owing to the avoidance of such friction. The crusher comprises pairs of crusher arms and a grid which constitutes the bottom of the crusher and forms with the arms a grate for feeding a quantity of crushed material to a chute dependent upon the speed at which the device is operated.

1,408,662—*F. L. O. Wadsworth*, Sewickley, Pa., March 7, 1922. Assigned to Jeffrey Mfg. Co.

COAL CUTTING MACHINE which gives to the cutting devices two simultaneous movements, one a forward movement in the direction of the cut and the other an angling movement in the plane of the cut, so that the cutter element as a whole is advanced not in parallel with itself but with an oscillating or zigzag movement, by reason of which the cutting element is presented at each instance at a new angle to the surface of the cut. The forward oscillating movement of the cutter element may be automatically and continuously maintained without attention on the part of the operator.

1,408,767—*D. C. Mulvihill*, Hannibal, Mo., March 7, 1922.

MINE CAR AXLE.

1,408,878—*J. C. Gaskill*, Fairmont, W. Va., March 7, 1922.

MINE CAR BEARING AND AXLE in which the bearings are mounted in a channel bar secured to the bottom of the car in such a manner that the bearings are held in their proper position and a construction of axle is provided for taking up the end thrust by a central thrust bearing in order to relieve the end bearings of the strain.

1,408,971—*Richard Battey*, Black Diamond, Wash., March 7, 1922.

METHOD OF MINING COAL involving the provision of a long line or face of coal in an inclined vein, so that when the coal is loosened, as by blasting, it will fall down the inclination, clearing the seat of operations and will be precipitated therefrom through chutes into the mine cars, permitting the operation at the face to continue without interruption and by advancing the line of face

Conducted by *John Boyle, Jr.*

along the inclination, eliminating the usual chutes and cross cuts.

1,409,385—*A. McDougall*, Duluth, Minn., March 14, 1922.

ORE WASHING DEVICE especially for iron ore, such as is found in Northern Minnesota and comprising a greatly diffused mixture of large and small pieces of ore resembling gravel formation together with atomized paint rock, volcanic ash and exceedingly fine sand. In some of these ores from ten to twenty percent are coarse pieces of better grade ore and can be easily separated by screening while the remainder, comprising the finer particles, form a mass that can only be thoroughly disintegrated by mixing with water and violently agitating the same. This is accomplished by passing the ore through a centrifugal pump, the tailings not properly separated being passed through a second pump and reworked through the same trough.

1,409,532—*G. F. Dillig*, Pittsburgh, Pa., March 14, 1922.

MINING MACHINE comprising a tractor base, preferably of the caterpillar type, and upon which is pivotally mounted a conveyor adapted to be swung in a vertical plane and provided on its front end with a ramming shovel which is used to knock down hung shots, or reduce lumps too large for the conveyor to handle, and also to be inserted into or under the material to be loaded, thereby feeding the same to the conveyor. Means are provided for swinging the conveyor relative to the base, so that the shovel may be adjusted to the desired elevation; means are also provided for cushioning the conveyor so as to relieve the jar on the machine when ramming, said means serving also to resiliently hold the shovel down against the floor of the mine when coal is being picked up therefrom.

1,409,558—*H. Louven*, Douglas, Ariz., March 14, 1922.

COMBINATION CRUSKER AND MILL comprising a rotary drum in which the ore is crushed, the drum comprising spaced bars which form walls therefor and around which there is a detachable screen, the crushed ore passing between the bars and through the screen. A shaft extends through the drum rotating in the same direction as and at a greater speed than the drum and carrying means for mauling the ore within the drum until it is fine enough to pass between the bars and through the screen.

1,409,635—*J. Wysock*, Plymouth, Pa., March 14, 1922.

FASTENER FOR MINE CAR DOORS.

1,410,288—*L. H. Falley*, Kansas City, Mo., March 21, 1922.

SEPARATING AND CLASSIFYING APPARATUS comprising a plurality of, down flow settling compartments arranged in inclined parallel and superposed relation, means for baffling the downward flow through the said compartments, means providing communication between adjoining compartments, the lower of said compartments being provided with a plurality of separate outlet openings for the discharge of the material being treated, and means for separately collecting the material as discharged from said outlet openings.

1,410,425—*J. T. Thomas*, Fort Myers, Fla., March 21, 1922.

AUTOMATIC DOOR FOR MINES.

1,410,596—*T. E. Pray*, Chicago, Ill., March 28, 1922. Assigned to Goodman Mfg. Co.

MINING LOCOMOTIVE wherein the frame is such as to secure an efficient distribution of the material required for weight and strength and a connection between the frame and the parts carried thereby and the axle, such that the weight of the locomotive comes central on the axle boxes.

1,410,616—*W. S. Stacy*, Ashland, Ore., March 28, 1922.

CONCENTRATOR.

1,410,781—*E. S. Towne, F. B. Flinn*, New York, March 28, 1922. Assigned to Pneumatic Process Flotation Co.

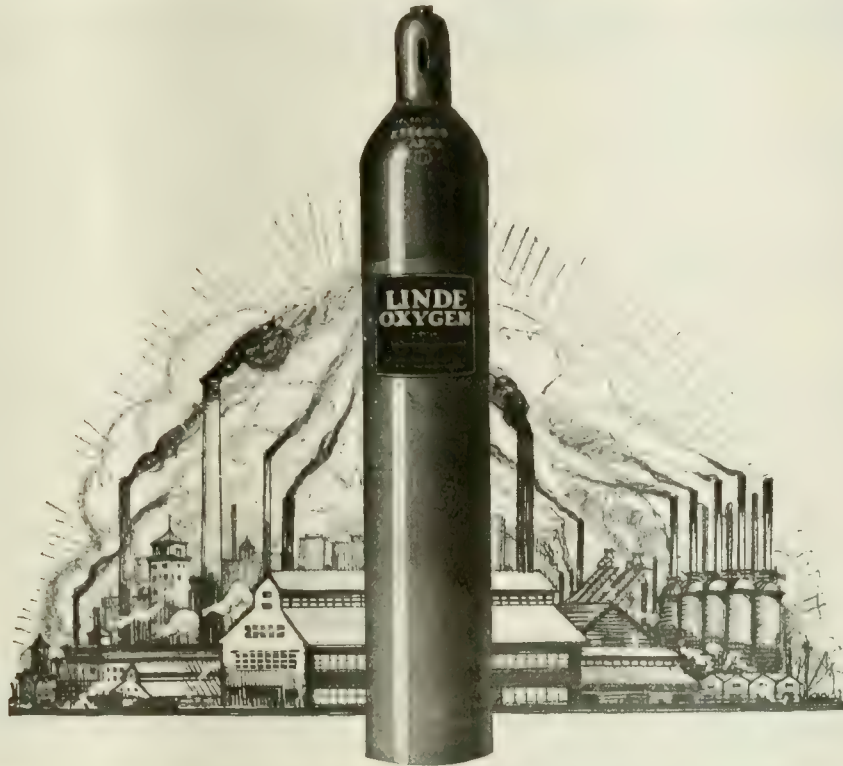
FROTHING CLASSIFIER comprising a tank having an overflow for froth, a downwardly converging permeable bottom, and means for delivering gaseous fluid to the tank through the converging permeable bottom.

1,410,936—*E. S. Lever and C. E. Van Barneveld*, Tucson, Ariz., March 28, 1922.

TREATING NON-SULPHIDE ORE in water to the action of hot gases containing sulphur dioxide and oxygen, to produce metallic sulphate in solution, precipitating the metal from such sulphate by a precipitating agent and separating the metal so precipitated.

1,410,939—*J. A. McArdle*, Bremerton, Wash., March 28, 1922.

HYDRAULIC MINING SYSTEM including a tube having an open end to be embedded in the source of ore supply with the opposite end located in a receiving pool, agitating the source of supply at the entering end of the tube, transverse riffles arranged in the tube and a water pipe extending lengthwise of the tube and having openings leading to the space between the riffles.



Consider 3 Distinct Features of the Linde Valve Which Are of Value to the User

EASE OF OPERATION

Friction is reduced to a minimum. Valves are opened and closed with an easy turning hand wheel. No wrenches are necessary.

MAIN SEAT GAS TIGHT

The needle point main seat insures receipt of cylinders with contents intact. Between jobs it prevents wastage. The slight wear from use is automatically taken up. The seat renews itself with use.

NO STEM LEAKS

Free passage of gas is obtained when the valve is opened wide. The back seat thus made prevents leakage around the stem while cylinder is used. Gas pressure merely makes the seat more secure.

This is an example of LINDE Engineering applied to oxygen distribution. It is the result of tests of all types of valves and valve construction. These tests included repeated opening and closing of each type under actual working conditions far beyond the most severe service demand.

The LINDE Valve is typical of the high standards of service which have made LINDE Oxygen the choice of thousands of discriminating oxygen users the country over. The nearest District Sales Office will gladly furnish you with complete information as to LINDE prices and sales plans.

For Your Convenience—Distributing Stations at every important industrial center.

At Your Service—District Sales Offices in these cities:

ATLANTA
CLEVELAND
NEW YORK

BOSTON
DALLAS
PHILADELPHIA
SAN FRANCISCO

BUFFALO
DETROIT
PITTSBURGH

CHICAGO
MILWAUKEE
ST. LOUIS

THE LINDE AIR PRODUCTS COMPANY

Carbide and Carbon Building, 30 East 42nd Street, New York

BALFOUR BUILDING, SAN FRANCISCO

THE LARGEST PRODUCER OF OXYGEN IN THE WORLD

BUYER'S DIRECTORY

ACID, SULPHURIC

Irvington Smelting & Refining Works, Irvington, N. J.

AERIAL TRAMWAYS

American Steel & Wire Co., Chicago and New York.

AERIAL TRAMWAY CABLE

Williamsport Wire Rope Co., 1301 Peoples Gas Bldg., Chicago, Ill.

AIR COMPRESSORS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

General Electric Co., Schenectady, N. Y.

AMALGAMATORS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

APPLIANCES, ENGINEERING

Lunkenheimer Co., Cincinnati, Ohio.

ARMATURES

General Electric Co., Schenectady, N. Y.

ASSAYERS

Pennsylvania Smelting Co., Pittsburgh, Pa.

AUTOMATIC CAR CAGERS

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

AUTOMATIC COAL SKIP

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

AUTOMATIC (Mine Doors, Truck and Electric Switches)

American Mine Door Co., Canton, Ohio.

BAROMETERS

Taylor Instrument Companies, Rochester, N. Y.

BATTERY-CHARGING EQUIPMENT

General Electric Co., Schenectady, N. Y.

BELTING (Conveyor, Elevator, Transmission)

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

BELTING, SILENT CHAIN

Morse Chain Co., Ithaca, N. Y.

BINS (Coke and Coal)

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

BIT SHARPENERS

Denver Rock Drill Mfg. Co., Denver, Colo.

Ingersoll-Rand Co., 11 Broadway, New York City.

BLASTING POWDER

Hercules Powder Co., 934 King St., Wilmington, Del.

BLASTING SUPPLIES

Atlas Powder Company, Wilmington, Del.

du Pont Powder Co., The E. I., Wilmington, Del.

Hercules Powder Co., 934 King St., Wilmington, Del.

BLOWERS

General Electric Co., Schenectady, N. Y.

BLOWERS' CENTRIFUGAL

Ingersoll-Rand Co., 11 Broadway, New York City.

BOILER MOUNTINGS

Lunkenheimer Co., Cincinnati, Ohio.

BOILERS

Allis-Chalmers Mfg. Co., Milwaukee, Wis. (feed pump).

BOXES, JOURNAL

J. R. Fleming & Son Co., Inc., Scranton, Penna.

BREAKERS (Construction and Machinery)

Jeffrey Mfg. Co., Columbus, Ohio.

Vulcan Iron Works, Wilkes-Barre, Pa.

Wilnot Engineering Co., Hazleton, Pa.

BRIQUETTING MACH.

Jeffrey Mfg. Co., Columbus, Ohio.

BUCKETS (Elevator)

Jeffrey Mfg. Co., Columbus, Ohio.

CABLES (Connectors and Guides)

American Mine Door Co., Canton, Ohio.

CABLEWAYS

Jeffrey Mfg. Co., Columbus, Ohio.

Lidgerwood Mfg. Co., 96 Liberty St., New York City.

CAGE (Safety Appliances)

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

CAGES

Car-Dumper & Equipment Co., Chicago, Ill.

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

Holmes & Bros., Robert, Inc., Danville, Ill.

Lidgerwood Mfg. Co., 96 Liberty St., New York City.

CAR CONTROL AND CAGE EQUIPMENT

Car-Dumper & Equipment Co., Chicago, Ill.

CAR DUMPS

Car-Dumper & Equipment Co., Chicago, Ill.

CAR AND CAR WHEELS

Hockensmith Mine Car Co., Penn Station, Pa.

CAR-HAULS

Car-Dumper & Equipment Co., Chicago, Ill.

CASTINGS

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

The Lunkenheimer Co., Cincinnati, Ohio.

CHAINS

Jeffrey Mfg. Co., Columbus, Ohio.

Morse Chain Co., Ithaca, N. Y.

CHAINS, AUTOMOBILE ENGINE

Morse Chain Co., Ithaca, N. Y.

CHAINS, DRIVE

Morse Chain Co., Ithaca, N. Y.

CHAINS, FRONT END

Morse Chain Co., Ithaca, N. Y.

CHAINS, OILING

Morse Chain Co., Ithaca, N. Y.

CHAINS, POWER TRANSMISSION

Morse Chain Co., Ithaca, N. Y.

CHAINS, SILENT (Rocker-Joint)

Morse Chain Co., Ithaca, N. Y.

CHAINS, SLING

Morse Chain Co., Ithaca, N. Y.

CHAINS, SPROCKET WHEEL

Morse Chain Co., Ithaca, N. Y.

CHEMICALS

Roessler & Hasslacher Chemical Co., 709-717 Sixth Avenue, New York.

CHEMISTS

Hunt, Robt., & Co., Insurance Exchange, Chicago, Ill.

CIRCUIT BREAKERS

General Electric Co., Schenectady, N. Y.

CLAMPS (Trolley)

Ohio Brass Co., Mansfield, Ohio.

CLUTCHES

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

COAL COMPANIES

Clinchfield Coal Corp., Dante, Va.

Lehigh Coal & Navigation Co., Philadelphia, Pa.

Stonega Coal & Coke Co., Philadelphia, Pa.

Thorne, Neale & Co., Philadelphia, Pa.

Wholesale Coal Co., Pittsburgh, Pa.

COAL CRUSHERS

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

Jeffrey Mfg. Co., Columbus, Ohio.

COAL CUTTERS

Goodman Mfg. Co., Chicago, Ill.

Jeffrey Mfg. Co., Columbus, Ohio.

COAL DRYING PLANTS

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

COAL HANDLING MACHINERY

Jeffrey Mfg. Co., Columbus, Ohio.

Lidgerwood Mfg. Co., 96 Liberty St., New York City.

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

COAL MINING MACHINERY

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Goodman Mfg. Co., Chicago, Ill.

Ingersoll-Rand Co., 11 Broadway, New York City.

Jeffrey Mfg. Co., Columbus, Ohio.

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

COAL MINE POWER

PLANTS

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

COAL MINING PLANTS

Ingersoll-Rand Co., 11 Broadway, New York City.

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

COAL WASHING PLANTS

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

COCKS (Locomotive, Cylinder and Gauge)

The Lunkenheimer Co., Cincinnati, Ohio.

Nicholson, W. H., & Co., Wilkes-Barre, Pa.

COILS (Choke)

General Electric Co., Schenectady, N. Y.

COMPRESSORS, AIR

General Electric Co., Schenectady, N. Y.

Ingersoll-Rand Co., 11 Broadway, New York City.

COMPRESSORS, MINE CAR

Ingersoll-Rand Co., 11 Broadway, New York City.

CONCENTRATORS (Table)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

CONCRETE REINFORCEMENT

American Steel & Wire Co., Chicago and New York.

CONDENSERS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Ingersoll-Rand Co., 11 Broadway, New York City.

CONSULTING ENGINEERS

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

CONTRACTORS

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

CONTROLLERS

General Electric Co., Schenectady, N. Y.

Goodman Manufacturing Co., Halsted St. and 48th Place, Chicago, Ill.

CONVEYORS, BELT

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

CONVEYORS, CHAIN FLIGHT

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

Wilnot Engineering Co., Hazleton, Pa.

CONVEYORS, COAL

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

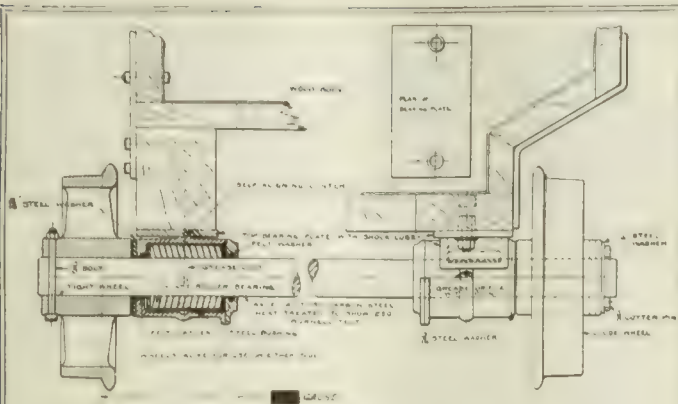
Lidgerwood Mfg. Co., 96 Liberty St., New York City.

CONVEYORS AND ELEVATORS

Jeffrey Mfg. Co., Columbus, Ohio.

CONVEYORS, PAN OR APRON

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.



FLEMING

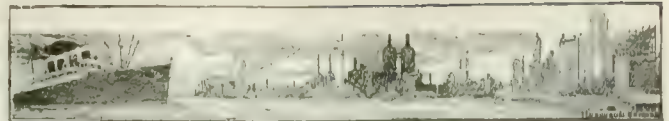
Self-Aligning, Hyatt Roller-Bearing Journal Boxes

Our Re-equipment Plan will interest you because it will save hundreds of dollars worth of your plain bearing wheels and axles from the scrap pile.

Let us tell you how much it will cost to re-equip with Hyatt Roller Bearings as applied with Fleming-Hyatt Self-Aligning Journal Boxes.

Let us re-equip a trial car—just mail a print or a few specifications of the car

J. R. FLEMING & SONS' CO.
SCRANTON, PA.



Tycos

TEMPERATURE INSTRUMENTS
INDICATING - RECORDING - CONTROLLING

Most appreciated where exactness is of prime importance in processes involving temperature

Your letter of inquiry will have immediate attention



Taylor Instrument Companies
ROCHESTER, N.Y.
There's a Tycos or Taylor Temperature Instrument for Every Purpose

860

Hockensmith Trucks will "stand the gaff"

Double angle bar trucks combine lowest "overall" height with maximum strength and endurance.

Steel-Wood and All-Wood Mine Cars—made to your specifications, equipped with the famous Hockensmith Eureka wheels.

Hockensmith Wheel & Mine Car Co.
PENN, PA.



O-B Type D Frog (Patented)
with O-B Cam Tips

Speed when you put them on the wire—
Life when you get them there

It's a quick job and an easy one to get O-B Frogs on the trolley wire. A single, central clamp holds both main and branch wires securely. Putting on the cam tips is the only other thing to do—and it takes only 30 to 40 seconds each to install them.

And when it is installed, an O-B Frog is ready for hard service and lots of it.

The Ohio
Mansfield



Brass Company
Ohio, U. S. A.

CONVEYORS, SCREW

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

COPPER ELECTROLYTIC

United Metals Selling Co., 42 Broadway, New York City.

COPPER WIRE

Anaconda Copper Mining Co., 111 W. Washington St., Chicago, Ill.

CORE DRILLING

H. R. Ameling Prospecting Co., Rolla, Mo.

Hoffman Bros., Punxsutawney, Pa.

CRUSHERS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

CRUSHERS, COAL

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

CRUSHING PLANTS, COKE

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

CYANIDE

American Cyanamid Co., New York, N. Y.

Roessler and Hasslacher Chemical Company, 709 Sixth Avenue, New York City.

DESIGNERS OF PLANTS

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

DIAMOND CORE DRILL CONTRACTING

H. R. Ameling Prospecting Co., Rolla, Mo.

Hoffman Bros., Punxsutawney, Pa.

DOORS, AUTOMATIC MINE

American Mine Door Co., Canton, Ohio.

DRAG LINES

Denver Rock Drill Mfg. Co., Denver, Colo.

Williamsport Wire Rope Co., Gen. Sales Office, 1301 Peoples Gas Bldg., Chicago, Ill.

DREDGES, GOLD AND TIN

New York Engineering Co., 2 Rector St., New York City.

DRIFTERS, DRILL

Denver Rock Drill Mfg. Co., Denver, Colo.

Ingersoll-Rand Co., New York City.

DRILLS, AIR & STEAM

Ingersoll-Rand Co., 11 Broadway, New York City.

DRILLS (Blast Hole)

Denver Rock Drill Mfg. Co., Denver, Colo.

Ingersoll-Rand Co., New York City.

DRILLS, CORE

H. R. Ameling Prospecting Co., Rolla, Mo.

Hoffman Bros., Punxsutawney, Pa.

DRILLS, ELECTRIC

General Electric Co., Schenectady, N. Y.

Ingersoll-Rand Co., New York City.

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

DRILLS, HAMMER

Denver Rock Drill Mfg. Co., Denver, Colo.

Ingersoll-Rand Co., New York City.

DRILLS (Hand Operated Coal)

Ohio Brass Co., Mansfield, Ohio.

Ingersoll-Rand Co., New York City.

DRILLS, PNEUMATIC

Denver Rock Drill Mfg. Co., Denver, Colo.

Ingersoll-Rand Co., New York City.

DRILLS, PROSPECTING

H. R. Ameling Prospecting Co., Rolla, Mo.

Hoffman Bros., Punxsutawney, Pa.

Ingersoll-Rand Co., 11 Broadway, New York City.

New York Engineering Co., 2 Rector St., New York City.

DRILLS, ROCK

Denver Rock Drill Mfg. Co., Denver, Colo.

General Electric Co., Schenectady, N. Y.

Ingersoll-Rand Co., New York City.

DRILL STEEL SHARPENERS

Denver Rock Drill Mfg. Co., Denver, Colo.

Ingersoll-Rand Co., 11 Broadway, New York City.

DRIVES, SILENT CHAIN

Morse Chain Co., Ithaca, N. Y.

DRUMS (Hoisting, Haulage)

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

DRYERS, ORE

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

DUMPERS, ROTARY

Car-Dumper & Equipment Co., Chicago, Ill.

DUMP CARS

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

DYNAMITE

Atlas Powder Co., Wilmington, Del.

Du Pont Powder Co., The E. I., Wilmington, Del.

Hercules Powder Co., 934 King St., Wilmington, Del.

DYNAMOS

General Electric Co., Schenectady, N. Y.

Goodman Mfg. Co., Forty-eighth Place and Halsted St., Chicago, Ill.

EJECTORS

The Lunkenheimer Co., Cincinnati, Ohio.

ELECTRICAL APPARATUS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

General Electric Co., Schenectady, N. Y.

ELECTRIC HOISTING MACHINERY

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

ELECTRIC LOCOMOTIVES

General Electric Co., Schenectady, N. Y.

Goodman Mfg. Co., Forty-eighth Place and Halsted St., Chicago, Ill.

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

Ohio Brass Co., Mansfield, Ohio.

ELECTRIC MINE SUPPLIES

General Electric Co., Schenectady, N. Y.

ELECTRICAL SUPPLIES

General Electric Co., Schenectady, N. Y.

ELEVATORS

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

ELEVATORS, BUCKET

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

ELEVATOR CABLES

Williamsport Wire Rope Co., 1301 Peoples Gas Bldg., Chicago, Ill.

ELEVATOR MACHINERY

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

ENGINE TRIMMINGS

The Lunkenheimer Co., Cincinnati, Ohio.

ENGINEERING APPLIANCES

The Lunkenheimer Co., Cincinnati, Ohio.

ENGINES

Lidgerwood Mfg. Co., 96 Liberty St., New York City.

ENGINES, GAS AND GASOLINE

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

ENGINES (Hoisting and Hauling)

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

ENGINES, OIL

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Ingersoll-Rand, 11 Broadway, New York City

ENGINES, STEAM

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

ENGINEERS

H. R. Ameling Prospecting Co., Rolla, Mo.

Hunt, Robert & Co., Insurance Exchange, Chicago, Ill.

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

EXPLOSIVES

Atlas Powder Co., Wilmington, Del.

Du Pont Powder Co., Wilmington, Del.

Hercules Powder Co., 934 King St., Wilmington, Del.

FANS, VENTILATING

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

General Electric Co., Schenectady, N. Y.

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

Vulcan Iron Works, Wilkes-Barre, Pa.

FEEDERS, ORE

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

FILTERS (Water)

Wm. B. Scaife & Sons Co., Oakmont, Pa.

FLOTATION OILS

Hercules Powder Co., 934 King St., Wilmington, Del.

FLOW METERS

General Electric Co., Schenectady, N. Y.

FORGINGS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

FROGS AND SWITCHES

Central Frog & Switch Co., Cincinnati, Ohio.

FURNACES, MECHANICAL ROASTING

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

GEARS

General Electric Co., Schenectady, N. Y.

Jeffrey Mfg. Co., Columbus, Ohio.

GEARS, SILENT CHAIN

Morse Chain Co., Ithaca, N. Y.

GENERATORS AND GENERATING SETS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

General Electric Co., Schenectady, N. Y.

GUY LINES

Williamsport Wire Rope Co., 1301 Peoples Gas Bldg., Chicago, Ill.

HANGERS (Insulated Trolley)

Ohio Brass Co., Mansfield, Ohio.

HEADLIGHTS, ARC AND INCANDESCENT

General Electric Co., Schenectady, N. Y.

Ohio Brass Co., Mansfield, Ohio.

HOISTS, ELECTRIC

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

Lidgerwood Mfg. Co., 96 Liberty St., New York City.

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

Vulcan Iron Works, Wilkes-Barre, Pa.

HOISTS, PORTABLE

Ingersoll-Rand Co., 11 Broadway, New York City.

Lidgerwood Mfg. Co., 96 Liberty St., New York City.

HOISTS, STEAM

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

Ingersoll-Rand Co., 11 Broadway, New York City.

Lidgerwood Mfg. Co., 96 Liberty St., New York City.

HOISTING ROPES

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

HOSE, AIR & STEAM

Ingersoll-Rand Co., 11 Broadway, New York City.

HYDRAULIC MACHINERY

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Car-Dumper & Equipment Co., Chicago, Ill.

HYDROMETERS

Taylor Instrument Companies, Rochester, N. Y.

HYGRODEIKS

Taylor Instrument Companies, Rochester, N. Y.

INDUSTRIAL HOUSING

General Electric Co., Schenectady, N. Y.

INJECTORS

The Lunkenheimer Co., Cincinnati, Ohio.



LUNKENHEIMER

Valves and Engineering Appliances

SERVICE, resistance to wear, their *permanence* in the line recommends them particularly for use on Power Equipment, Globes, Angle and Cross, Gate, Check, Pop Safety and Relief, Throttle and Safety Non-return Valves, Engine Trimmings, Automotive Accessories, etc.

Write for Catalog No. 53 H.

THE LUNKENHEIMER CO.

QUALITY
LARGEST MANUFACTURERS OF
HIGH GRADE ENGINEERING SPECIALTIES
IN THE U. S. A.

NEW YORK BOSTON
CHICAGO CINCINNATI LONDON
EXPORT DEPT. 129-135 LAFAYETTE ST. NEW YORK

32-28 B



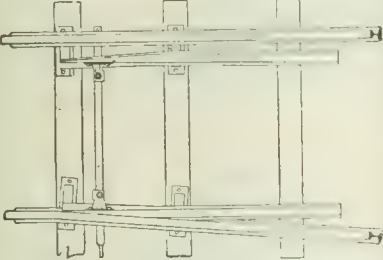


John A. Roebbling's Sons Co.
TRENTON, NEW JERSEY.

CENTRAL

MINE TRACK EQUIPMENT

Instead of using 18 to 30-inch latches hammered out of square iron, in your blacksmith shop, use these long latches, cut from standard section rail and carefully planed to the correct shape. Keep your cars on the track—not in the ditch.



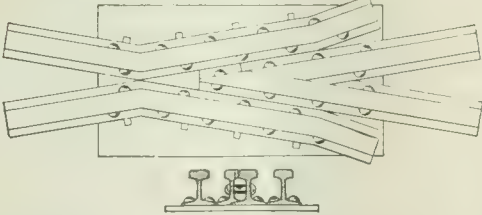
Split Switch

Frogs, too, are a prolific source of trouble to the mine manager. Despite the most careful hand work, if constructed in the ordinary way, they get out of line.

CENTRAL

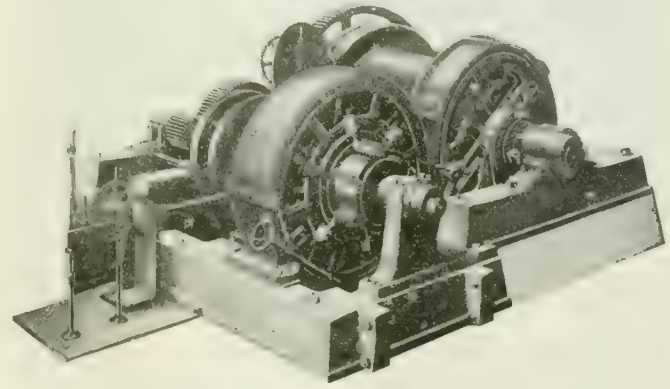
frogs are permanently riveted to heavy steel plates.

Riveted Plate Frog



THE CENTRAL FROG & SWITCH CO.
CINCINNATI, OHIO

The Connellsville Manufacturing and Mine Supply Company
Connellsville, Pa.



If you need any cost reducing mine equipment, write us.

The Cage, Hoist and Fan Builders

Irvington Smelting and Refining Works

Buyers, Smelters and Refiners of
Gold, Silver, Lead, Copper and Platinum Ores, Sweeps and Bullion
Manufacturers of Copper Sulphate

IRVINGTON :: NEW JERSEY

NEW YORK OFFICE—Charles Engelhard
Hudson Terminal Building 30 Church Street

CORE DRILLING

H. R. AMELING PROSPECTING COMPANY, INC.

Diamond Drill Contractors
20 Years' Continuous Service
Not a Dissatisfied Customer

ROLLA, MISSOURI

Home: State Geologic Survey, Missouri School of Mines

INSTRUMENTS, ELECTRICAL

General Electric Co., Schenectady, N. Y.

INSULATING MATERIAL, ELECTRIC

General Electric Co., Schenectady, N. Y.

INSULATING TAPE AND CLOTH

General Electric Co., Schenectady, N. Y.

INSULATORS, FEEDER WIRE

General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

INSULATORS, SECTION

General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

INSULATORS (Porcelain)

General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

INSULATORS (Third Rail)

General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

INSULATORS (Trolley)

General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

INSULATED WIRE AND CABLE

American Steel & Wire Co., Chicago, Ill.
Roebling Sons, John A., Trenton, N. J.
Williamsport Wire Rope Co., Gen. Sales Office, 1301 Peoples Gas Bldg., Chicago, Ill.

JOURNAL BOXES

J. R. Fleming & Son Co., Inc., Scranton, Pa.

KILNS (Rotary)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

KILNS (Rotary Ore Nodulizers)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

LAMPS, ARC AND INCANDESCENT

General Electric Co., Schenectady, N. Y.

LAMPS (Carbon)

General Electric Co., Schenectady, N. Y.

LAMPS, ELECTRIC

General Electric Co., Schenectady, N. Y.

LEAD ORES

American Zinc, Lead & Smelting Co., 1012 Pierce Bldg., St. Louis, Mo.

LIGHTNING ARRESTERS

General Electric Co., Schenectady, N. Y.

LOADING BOOMS

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
Jeffrey Mfg. Co., Columbus, Ohio.
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

LOADING MACHINES

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

LOCOMOTIVE COALING STATIONS

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

LOCOMOTIVES, ELECTRIC

General Electric Co., Schenectady, N. Y.
Goodman Mfg. Co., Chicago, Ill.
Ironton Engine Co., Ironton, Ohio.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

LOCOMOTIVES, GASOLINE

Vulcan Iron Works, Wilkes-Barre, Pa.

LOCOMOTIVES, RACK RAIL

Goodman Mfg. Co., Chicago, Ill.

LOCOMOTIVES, STEAM

Vulcan Iron Works, Wilkes-Barre, Pa.

LOCOMOTIVES, STORAGE BATTERY

General Electric Co., Schenectady, N. Y.
Goodman Mfg. Co., Chicago, Ill.
Ironton Engine Co., Ironton, Ohio.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

MACHINERY, TRANSMISSION (Power)

Morse Chain Co., Ithaca, N. Y.

MILLS, STAMP

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

MINE CAR TRUCKS

J. R. Fleming & Son Co., Inc., Scranton, Pa.

MINE DOORS, AUTOMATIC

American Mine Door Co., Canton, Ohio.

MINING CABLES

Williamsport Wire Rope Co., 1301 Peoples Gas Bldg., Chicago, Ill.

MINING MACHINES

Goodman Mfg. Co., Forty-eighth Place and Halsted St., Chicago, Ill.

MINING MACHINES CHAIN AND PUNCHER

Goodman Mfg. Co., Forty-eighth Place and Halsted St., Chicago, Ill.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

MINING MACHINES (Electric)

General Electric Co., Schenectady, N. Y.
Goodman Mfg. Co., Chicago, Ill.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

MINING MACHINERY

Denver Rock Drill Mfg. Co., Denver, Colo.
Ingersoll-Rand Co., 11 Broadway, New York City.

MINE CAR HITCHINGS

Hockensmith Wheel & Mine Car Co., Penn Station, Pa.

MINE CAR TRUCKS

Hockensmith Wheel & Mine Car Co., Penn Station, Pa.

MINE SIGNALS

American Mine Door Co., Canton, Ohio.

MINING EQUIPMENT

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.
Ingersoll-Rand Co., 11 Broadway, New York City.

MOTOR CONTROL APPARATUS

General Electric Co., Schenectady, N. Y.

MOTORS

General Electric Co., Schenectady, N. Y.
Goodman Mfg. Co., Chicago, Ill.

MOUNTINGS, BOILER

The Lunkenheimer Co., Cincinnati, Ohio.

NODULIZERS, ORE

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

ORE, BUYERS AND SELLERS OF

Irvington Smelting & Refining Works, Irvington, N. J.
Phelps Dodge Corporation, New York City.

PERFORATED METALS

Chicago Perforating Co., Chicago, Ill.

PERMISSIBLES, Explosives

Atlas Powder Co., Wilmington, Del.
du Pont Powder Co., The E. I., Wilmington, Del.
Hercules Powder Co., Wilmington, Del.

PICKING TABLES

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

PIG LEAD

Pennsylvania Smelting Co., Pittsburgh, Pa.
United Metals Selling Co., 42 Broadway, New York City.

PIPE, CAST IRON

Hockensmith Mine Car Co., Penn Station, Pa.

PIPE (Wood)

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

PNEUMATIC TOOL

Ingersoll-Rand Co., 11 Broadway, New York City.

POWDER, BLASTING

Atlas Powder Co., Wilmington, Del.
du Pont Powder Co., The E. I., Wilmington, Del.
Hercules Powder Co., 934 King St., Wilmington, Del.

POWER TRANSMISSION MACHINERY

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

PROSPECTIVE DRILLS

H. R. Ameling Prospecting Co., Rolla, Mo.
Hoffman Bros., Punxsutawney, Pa.
Ingersoll-Rand Co., 11 Broadway, New York City.

PULVERIZERS, COAL AND COKE

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

PUMPS, CENTRIFUGAL

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Ingersoll-Rand Co., 11 Broadway, New York City.

PUMPS, AIR LIFT

Ingersoll-Rand Co., 11 Broadway, New York City.

PUMPS, MINE

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
Ingersoll-Rand Co., 11 Broadway, New York City.

PUMPS (Electric)

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

PUMPS (Gathering or Dip)

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

PUMPS, PNEUMATIC AIR LIFT

Ingersoll-Rand Co., 11 Broadway, New York City.

PUMPS, POWER

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
General Electric Co., Schenectady, N. Y.
Ingersoll-Rand Co., 11 Broadway, New York City.

PUMPS, SAND

Ingersoll-Rand Co., 11 Broadway, New York City.

PUMPS, STEAM

Ingersoll-Rand Co., 11 Broadway, New York City.

PUMPS, VACUUM

Ingersoll-Rand Co., 11 Broadway, New York City.

PYROMETERS

Taylor Instrument Companies, Rochester, N. Y.

QUARRYING MACHINERY

Ingersoll-Rand Co., 11 Broadway, New York City.

RAIL BONDS

American Steel & Wire Co., Chicago and New York.
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

RAILWAY SUPPLIES

General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

REGULATORS, TEMPERATURE AND PRESSURE

Taylor Instrument Companies, Rochester, N. Y.

ROCK DRILLS

Denver Rock Drill Mfg. Co., Denver, Colo.
General Electric Co., Schenectady, N. Y.
Ingersoll-Rand Co., 11 Broadway, New York City.

RODS, COPPER, HOT ROLLED

Anaconda Copper Mining Co., Rolling Mills Dept., 111 W. Washington St., Chicago, Ill.

ROLLING MILL MACHINERY

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

ROPE, TRANSMISSION

American Steel & Wire Co., Chicago and New York.
Roebling Sons, John A., Trenton, N. J.
Williamsport Wire Rope Co., Gen. Sales Office, 1301 Peoples' Gas Bldg., Chicago, Ill.

ROPE, WIRE

American Steel & Wire Co., Chicago and New York.
Roebling Sons, John A., Trenton, N. J.
Williamsport Wire Rope Co., Gen. Sales Office, 1301 Peoples' Gas Bldg., Chicago, Ill.

ROTARY DUMPS

Car-Dumper & Equipment Co., Chicago, Ill.

SAFETY APPLIANCES, MINE

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

SCRAPER LOADERS

Goodman Manufacturing Co., Halsted St. and 48th Place, Chicago, Ill.

PENNSYLVANIA SMELTING CO.

PITTSBURGH, PA.

*Manufacturers
of*

**ASSAYERS' C. P. LITHARGE
AND TEST LEAD**

OFFICE: PITTSBURGH, PA. WORKS: CARNEGIE, PA.

Phelps Dodge Corporation

99 JOHN STREET - - NEW YORK

Copper

"C * Q"
Electrolytic

"P. D. Co."
Casting

**SURE
TO OPEN**

**CANTON
AUTOMATIC
MINE
DOORS**

**Safeguard
Life—Positive
in Operation—
Open and Close
Quickly—Simple in Con-
struction—**



Built for Service—Prevent Explosions—Conserve Air.

**NO INVESTMENT REQUIRED
ABSOLUTELY NONE
ASK US HOW WE DO IT**



4000 IN USE

Can be Leased
or Bought.

Rental price per
month saved in
a few days. Purchase price saved
in a few months.

Write for Catalog
American Mine
Door Co.

916 Robin St.
Canton, Ohio

**SURE
TO CLOSE**



BALANCED

**“MARCUS”
COAL TIPPLES**

It is Well to Secure Our Design Before Building

ANNOUNCEMENT

Exclusive Agents for the installation of equipment for dry
cleaning of coal as manufactured by the American Coal Clean-
ing Corporation of Welch, W. Va.

ROBERTS AND SCHAEFER CO.

ENGINEERS AND CONTRACTORS - CHICAGO, U.S.A.

**Wilmot Engineering
Company**

Hazleton, Pennsylvania

Manufacturers of

**Improved Breaker Machinery
for Conveying, Crushing, Sizing
and Cleaning Anthracite Coal**

Robert W. Hunt

Jno. J. Cone

D. W. McNaugher

ROBERT W. HUNT & CO.

Engineers

Bureau of Inspection, Tests and
Consultation

2200 Insurance Exchange
Chicago

Mining Engineers and Chemists
Inspection Construction Materials and
Machinery at Point of Manufacture

SCREENS

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

SCREENS AND PERFORATED SHEETING

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Chicago Perforating Co., Chicago, Ill.
Holmes & Bros., Inc., Robert, Danville, Ill.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

SCREENS, REVOLVING

Chicago Perforating Co., Chicago, Ill.

SEARCHLIGHTS

General Electric Co., Schenectady, N. Y.

SHARPENERS, DRILL

Ingersoll-Rand Co., 11 Broadway, New York City.

SINKERS, ROCK DRILL

Denver Rock Drill Mfg. Co., Denver, Colo.
Ingersoll-Rand Co., 11 Broadway, New York City.

SKIPS

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

SMELTERS

Irvington Smelting & Refining Works, Irvington, N. J.

"SOLIDCAR" SELF-DUMPING CAGES

Car-Dumper & Equipment Co., Chicago, Ill.

SPLICE, CABLE

American Mine Door Co., Canton, Ohio.
Ohio Brass Co., Mansfield, Ohio.

SPLICE, INSULATOR

American Mine Door Co., Canton, Ohio.

SPLICE, TROLLEY WIRE

American Mine Door Co., Canton, Cincinnati, Ohio.
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

SPROCKETS, COMPENSATING

Morse Chain Co., Ithaca, N. Y.

SPROCKETS, SILENT CHAIN

Morse Chain Co., Ithaca, N. Y.

SPROCKETS, SPRING

Morse Chain Co., Ithaca, N. Y.

STANDARD HOISTING CABLES

Williamsport Wire Rope Co., 1301 Peoples Gas Bldg., Chicago, Ill.

STEEL, HOLLOW & SOLID DRILL

Ingersoll-Rand Co., 11 Broadway, New York City.

STEEL, REINFORCING

American Mine Door Co., Canton, Ohio.

STOPERS, ROCK DRILL

Denver Rock Drill Mfg. Co., Denver, Colo.
Ingersoll-Rand Co., 11 Broadway, New York City.

STORAGE BATTERIES, LOCOMOTIVES

General Electric Co., Schenectady, N. Y.
Ironton Engine Company, Ironton, Ohio.

SUSPENSION BRIDGE CABLES

Williamsport Wire Rope Co., 1301 Peoples Gas Bldg., Chicago, Ill.

SWITCHBOARDS, POWER

General Electric Co., Schenectady, N. Y.

SWITCHBOARDS, TELEPHONE

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

SWITCHES (Disconnecting and Electric)

General Electric Co., Schenectady, N. Y.

SWITCHES, FROGS AND CROSSINGS

Central Frog & Switch Co., Cincinnati, Ohio.

SWITCHES AND FROGS, TROLLEY

American Mine Door Co., Canton, Ohio.
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

SWITCHING CABLES

Williamsport Wire Rope Co., 1301 Peoples Gas Bldg., Chicago, Ill.

THERMOMETERS, ANGLE & STRAIGHT STEM

Taylor Instrument Companies, Rochester, N. Y.

THERMOMETERS, RECORDING & INDEX

Taylor Instrument Companies, Rochester, N. Y.

TIPPLES

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

TIPPLE DESIGNERS

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

TIPPLE EQUIPMENT

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

TRACKS, PORTABLE, RAIL, ETC.

Central Frog & Switch Co., Cincinnati, Ohio.
West Virginia Rail Co., Huntington, W. Va.

TRAMWAYS

A. Leschen & Sons Rope Co., St. Louis, Mo.

TRANSFORMERS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.

TRANSMISSION ROPE

Williamsport Wire Rope Co., 1301 Peoples Gas Bldg., Chicago, Ill.

TRANSMISSION, SILENT CHAIN

Morse Chain Co., Ithaca, N. Y.

TRAPS

Nicholson & Co., W. H., Wilkes-Barre, Pa.

TRIMMINGS, ENGINE

The Lunkenheimer Co., Cincinnati, Ohio.

TROLLEY FROGS

Central Frog & Switch Co., Johnstown, Pa.
Ohio Brass Co., Mansfield, Ohio.

TROLLEY (Hangers and Clamps)

General Electric Co., Schenectady, N. Y.
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

TROLLEY MATERIAL, OVERHEAD

General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

TROLLEY WHEELS AND HARPS

General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

TROLLEY WIRE

Anaconda Copper Mining Co., Rolling Mills Dept., 111 W. Washington St., Chicago, Ill.

TRUCKS FOR MINE CARS

J. R. Fleming & Son Co., Inc., Scranton, Pa.

TURBINES, STEAM

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.

VALVES

The Lunkenheimer Co., Cincinnati, Ohio.
Ohio Brass Co., Mansfield, Ohio.

WAGON LOADERS

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

WASHERIES

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

WATER SOFTENING AND PURIFYING APPARATUS

Wm. B. Scaife & Sons Co., Oakmont, Pa.

WELDING APPARATUS, ELECTRIC ARC

General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

WHISTLES

The Lunkenheimer Co., Cincinnati, Ohio.

WIRE AND CABLE

American Steel & Wire Co., Chicago and New York.
Anaconda Copper Mining Co., Rolling Mills Dept., 111 W. Washington St., Chicago, Ill.
General Electric Co., Schenectady, N. Y.
Roebing Sons, The John A., Trenton, N. J.
Williamsport Wire Rope Co., Gen. Sales Office, 1301 Peoples Gas Bldg., Chicago, Ill.

WIRE ROPE

A. Leschen & Sons Rope Co., St. Louis, Mo.
Williamsport Wire Rope Co., Gen. Sales Office, 1301 Peoples Gas Bldg., Chicago, Ill.

WIRE ROPE FITTINGS

American Steel & Wire Co., Chicago and New York.
Williamsport Wire Rope Co., Gen. Sales Office, 1301 Peoples Gas Bldg., Chicago, Ill.

ZINC ORES

American Zinc, Lead & Smelting Co., 1012 Pierce Bldg., St. Louis, Mo.

ATTEND!

*The 25th Annual Convention
The American Mining Congress*

Cleveland, Ohio

Oct. 9-14, 1922



**THE
WEST VIRGINIA
RAIL CO.**

**Manufacturers
Light Steel Rails
and Accessories**

8, 12, 16, 20, 25, 30, 35,
40, 45 lbs. per yd.

Mills and General Offices
**HUNTINGTON
W. Virginia**



**SAFETY
FIRST**

THE HELPING HAND

Don't Trust to blind Luck. Use discretion, post unmistakable SIGNS of Danger and Caution. Create a SAFETY ATMOSPHERE — educate your employee and public in Safety.

Reduce Compensation and Public Liability Premiums and increase efficiency by posting and using
ACCIDENT PREVENTION SIGNS AND TAGS

The Stonehouse Steel Sign Co. Denver

A Guaranteed Pine Oil Supply

The best flotation frother is pine oil, and in particular steam-distilled pine oil. The Naval Stores Division of the Hercules Powder Co. is prepared to meet your requirements for a steam-distilled pine oil of superior and uniform quality, and free from foreign matter.

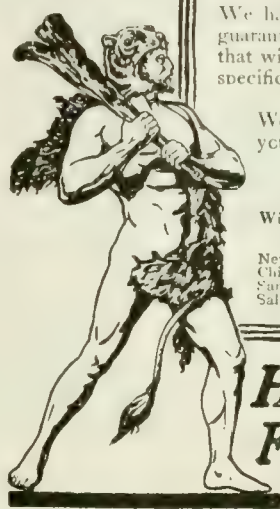
We have three plants whose capacity guarantees you a dependable supply that will not vary from your original specifications.

We shall be glad to help you with your flotation problems.

HERCULES POWDER CO.
Wilmington Delaware

SALES OFFICES

New York, N. Y.	Duluth, Minn.
Chicago, Ill.	Joplin, Mo.
San Francisco, Cal.	St. Louis, Mo.
Salt Lake City, Utah	Chattanooga, Tenn.



**HERCULES
Flotation Oils**

Produced Under Chemical Control

S E R V I C E

At Washington

WASHINGTON has acquired a new significance since the unprecedented burdens of Government finance have staggered industry with the cost of war and its aftermath.

MAINTENANCE of the United States now demands five billion dollars per year—collected by the Bureau of Internal Revenue.

COLLECTION of five billion dollars, largely self-assessed, inevitably means uncertainty and economic stress in the process, under any tax law. The present code provokes genuine confusion that can only be ameliorated by genuine cooperation between the taxpayer and the Treasury Department.

The American Mining Congress, acting as an unofficial intermediary, is striving to be of aid both to you and the Revenue Bureau in solving the peculiar problems that inherently attach to the mineral industry.

The American Mining Congress, an organization of service, representing the basic industry of forty-two states, speaks

FOR YOU
Write

THE AMERICAN MINING CONGRESS

MUNSEY BUILDING	WASHINGTON, D. C
-----------------	------------------

American Mining Congress

OFFICERS AND COMMITTEES, 1922

OFFICERS

W. J. LORING, President.
DANIEL B. WENTZ, First Vice-President.
E. L. DOHENY, Second Vice-President.
THOMAS T. BREWSTER, Third Vice-President.
J. F. CALLBREATH, Secretary.

DIVISION STAFF

E. C. PORTER, Convention Manager.
GEORGE H. BAILEY, Counsel.
HAROLD N. LAWRIE, Economist.
H. W. SMITH, Chief Mineral Tariffs Division.
M. W. KRIEGH, Tax Division.
E. H. PULLMAN, Chief Publicity Department.
IRA L. SMITH, Asst. Publicity Department.
E. R. COOMBES, Asst. to Secretary.

DIRECTORS

W. J. LORING, San Francisco, Calif.
BULKELEY WELLS, Denver, Colo.
DANIEL B. WENTZ, Philadelphia, Pa.
JOHN C. HOWARD, Salt Lake City, Utah.
THOMAS T. BREWSTER, St. Louis, Mo.
CARL SCHOLZ, Charleston, W. Va.
H. W. SEAMAN, Chicago, Ill.
E. L. DOHENY, Los Angeles, Calif.
SIDNEY J. JENNINGS, New York.
HUGH SHIRKIE, Terre Haute, Ind.
ROBERT LINTON, New York City.
JAMES S. DOUGLAS, Douglas, Ariz.

EXECUTIVE COMMITTEE

W. J. LORING
SIDNEY J. JENNINGS, New York.

ROBERT LINTON

COMMITTEES

COOPERATION

AMERICAN MINING CONGRESS AND AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS

A. M. C.

Henry Mace Payne, Machinery Club, New York City.
A. Cressy Morrison, 42d St. Bldg., New York City.
J. E. Spurr, Hill Bldg., New York City.
W. R. Ingalls, 115 Broadway, New York City.
J. R. Finlay, Room 802, 45 Cedar St., New York City.
Daniel B. Wentz, Land Title Bldg., Philadelphia, Pa.

A. I. M. & M. E.

E. P. Mathewson, 42 Broadway, New York City.
W. L. Saunders, 11 Broadway, New York City.
Walter Douglas, 99 John St., New York City.
Benjamin B. Thayer, 42 Broadway, New York City.
Edwin Ludlow, 149 Broadway, New York City.
Samuel Taylor, Second National Bank Bldg., Pittsburgh, Pa.

TARIFF

A. H. Jarman, San Francisco, Calif.
Charles W. Potts, Deerwood, Minn.
B. F. Phillipson, New York City.
A. B. Conklin, Clay Graphite Co., Ashland, Ala.
A. G. Woodruff, Garrisonville, Va.
Edgar Wallower, Joplin, Mo.
Nelson Franklin, 603 Symes Bldg., Denver, Colo.
Jerome J. Day, Wallace, Idaho.
H. P. Baker, New Idria Quicksilver Mining Co., 157 Federal St., Boston, Mass.

ALASKAN AFFAIRS

John A. Davis, Fairbanks, Alaska.
Falcon Joslin, 2203 L. C. Smith Bldg., Seattle, Wash.
Bart L. Thane, 408 Crocker Bldg., San Francisco, Calif.

MINING IN FOREIGN COUNTRIES

J. E. Spurr, Chairman, Hill Bldg., New York City.
Van H. Manning, 15 West 44th St., New York City.
E. L. Doheny, Security Bldg., Los Angeles, Calif.
W. J. Loring, Crocker Bldg., San Francisco, Calif.
Matthew C. Fleming, New York City.
H. Foster Bain, Bureau of Mines, Wash., D. C.

ADVISORY COMMITTEE UNITED STATES BUREAU OF MINES AND GEOLOGICAL SURVEY

Bulkeley Wells, Chairman, Denver, Colo.
Walter Douglas, New York City.
Rembrandt Peale, New York City.
H. Foster Bain, U. S. Bureau of Mines, Washington, D. C.
George Otis Smith, U. S. Geological Survey, Washington, D. C.

DEPARTMENT OF MINES AND MINING

W. J. Loring, Chairman, San Francisco, Calif.
Walter Douglas, New York City
Bulkeley Wells, Denver, Colo.
George H. Crosby, Duluth, Minn.
D. C. Jackling, Hobart Bldg., San Francisco, Calif.
Carl Scholz, Charleston, W. Va.
S. D. Warriner, Philadelphia, Pa.

COOPERATION (INTERNAL REVENUE DEPARTMENT)

J. F. Callbreath, American Mining Congress, Munsey Bldg., Washington, D. C.
John T. Barnett, 1024 Lafayette St., Denver, Colo.
Paul Armitage, 2174, 233 Broadway, New York City
L. C. Boyle, Kansas City, Mo.
Rush C. Butler, Chicago, Ill.

COAL EXPORTS

Dr. Henry Mace Payne, Machinery Club, New York City
Geo. S. Rice, Bureau of Mines, Washington, D. C.
John C. Callahan, Woodward Bldg., Washington, D. C.
Chas. A. Owen, Pres., Imperial Coal Corporation, 17 Battery Pl., New York City
G. A. O'Reilly, Irving National Bank, New York City

FEDERAL TAXATION

Paul Armitage, Chairman
233 Broadway, New York, N. Y.
Geo. E. Holmes, Vice-Chairman
15 William St., New York, N. Y.

R. C. Allen, Kirby Building, Cleveland, Ohio
A. Scott Thompson, Miami, Okla.
Wm. B. Gower, 20 Exchange Place, New York, N. Y.
John C. Howard, Utah Oil Refining Co., Salt Lake City, Utah
R. V. Norris, 520 Second National Bank Bldg., Wilkes-Barre, Pa.
J. C. Dick, Dooly Block, Salt Lake City, Utah
A. P. Ramstedt, Wallace, Idaho
E. L. Doheny, Security Bldg., Los Angeles, Cal.
Robt. N. Miller, Southern Building, Washington, D. C.

UNIFORM COAL MINE REPORTS

S. A. Taylor, Second National Bank Bldg., Pittsburgh, Pa.
Carl Scholz, Virginia Land Bank Bldg., Charleston, W. Va.
A. H. Land, Huntington, W. Va.
Morton L. Gould, 701 Terminal Bldg., Indianapolis, Ind.
G. H. Caperton, Box 601, Charleston, W. Va.
Thomas T. Brewster, St. Louis, Mo.

STANDARDIZATION DIVISION

Metal and Coal Branches

COAL MINING BRANCH

General Committee

Colonel Warren R. Roberts, Chairman, Chicago, Ill.
E. D. Knight, 1208 Kanawha St., Charleston, W. Va.
C. E. Watts, Efficiency Engineer, Berwind-White Coal Mining Company, Windber, Pa.
A. B. Kiser, Electrical Engineer, Pittsburgh Coal Co., Pittsburgh, Pa.
W. J. Montgomery, Manager, Ventilating Dept., Jeffrey Manufacturing Co., Columbus, Ohio
K. A. Pauly, Power & Mining Engineering Dept., General Electric Co., Schenectady, N. Y.
E. N. Zern, Keystone Cons. Publishing Co., 711 Penn Ave., Pittsburgh, Pa.
Dr. Henry Mace Payne, Machinery Club, New York City
R. L. Adams, Chief Engr., Old Ben Coal Corp., Christopher, Ill.

Underground Transportation

C. E. Watts, Chairman

Charles M. Means, Consulting Engineering, Pittsburgh, Pa.
Graham Bright, Westinghouse Electric & Manufacturing Co., E. Pittsburgh, Pa.
Joseph Bryan, General Electric Co., Pittsburgh, Pa.
F. C. Coseo, Jeffrey Manufacturing Co., Columbus, Ohio
D. F. Lepley, General Manager, Connellsville Manufacturing & Supply Co., Connellsville, Pa.
E. A. Watters, General Supt., Hicks' Coal Companies, Leechburg, Pa.

J. Milliken, care Pittsburgh Testing Laboratory, P. O. Box 1115, Pittsburgh, Pa.
A. H. Ehle, General Sales Manager, Baldwin Locomotive Works, Philadelphia, Pa.
H. K. Porter, Mine Car Department, Hyatt Roller Bearing Co., New York City
Frank S. Barks, President, Lincoln Steel & Forge Co., St. Louis, Mo.
Fred Norman, Chief Engineer, Allegheny River Mining Co., Kittanning, Pa.
T. A. Parker, Manager, Mine Car & Equipment Dept., St. Louis Structural Steel Co., St. Louis, Mo.

Mining and Loading Equipment

E. N. Zern, Chairman

D. J. Carroll, Chicago, Wilmington & Franklin Coal Co., Benton, Ill.
Carl Scholz, General Manager, Raleigh-Wyoming Coal Co., Charleston, W. Va.
N. D. Levin, Jeffrey Manufacturing Co., Columbus, Ohio
J. M. Clark, Clark & Krebs, Charleston, W. Va.
M. Mitchell, Sullivan Machinery Co., St. Louis, Mo.
William Whaley, Myers-Whaley Co., Knoxville, Tenn.
Wm. O. Duntley, Duntley-Dayton Co., Chicago, Ill.
E. S. McKinley, 625 Denham Bldg., Denver, Colo.
Wm. E. Hamilton, 310 Schultz Bldg., Columbus, Ohio
Walter Stevens, Valier Coal Co., Valier, Ill.
S. W. Farnham, Mining Engineer, Goodman Mfg. Co., Chicago, Ill.
E. K. Bowers, Morgan-Gardner Electric Co., 2640 Shields Avenue, Chicago, Ill.
J. G. Smith, Cons. Coal Co., Jenkins, Ky.

Drainage

E. D. Knight, Chairman

M. C. Benedict, Consulting Engineer, Johnstown, Pa.
E. F. Austin, Manager, Mine Pump Dept., Dravo-Doyle Co., Pittsburgh, Pa.
Cecil W. Smith, Mining Engr., Nokomis Coal Co., Old Colony Building, Chicago, Ill.
F. W. Smith, Mine Drainage Engr., Weinman Pump & Supply Co., Pittsburgh, Pa.
F. J. Emeny, Chief Engr., The Deming Company, Salem, Ohio
Professor John W. Hallock, Head of Dept. of Industrial Engineering, University of Pittsburgh, Pittsburgh, Pa.
R. Y. Wert, Mine Drainage Supt., Durham Coal & Iron Co., Soddy, Tenn.
J. H. Edwards, Electrical Engr., Enkhorn Piney Coal Mining Co., Huntington, W. Va.
L. D. Tracy, Mining Engineer, U. S. Bureau of Mines, Pittsburgh, Pa.
Walter D. Stockley, 77 Union Arcade Bldg., Pittsburgh, Pa.
M. Spillman, Worthington Pump & Machinery Corp., Harrison, N. J.
Roscoe N. Woltz, Electrical Engr., Stonega Coal & Coke Co., Big Stone Gap, Va.
Henry E. Cole, Harris Pump & Supply Co., 320 Second Ave., Pittsburgh, Pa.
Chas. H. Matthews, care M. A. Hanna & Co., Cleveland, Ohio

Ventilation

W. J. Montgomery, Chairman

J. M. Doughty, Lehigh & Wilkes-Barre Coal Co., Wilkes-Barre, Pa.
Howard N. Eavenson, Mining Engr., Union Arcade Bldg., Pittsburgh, Pa.
J. C. Gaskill, Consolidation Coal Co., Fairmont, W. Va.
Martin J. Lide, Birmingham, Ala.
G. E. Lyman, Gen'l Supt., Madison Coal Corporation, Glen Carbon, Ill.
C. E. Sharpless, Engineer, Ebensburg Coal Co., Ebensburg, Pa.
E. B. Wagner, Lehigh Valley Coal Co., Wilkes-Barre, Pa.
H. Bert Wright, Pocahontas Fuel Co., Pocahontas, Va.
E. N. Zern, Mining Engineer and Editor "Mining Catalog," Pittsburgh, Pa.

Outside Coal Handling Equipment

Henry Mace Payne, Chairman

G. F. Osler, G. S. Carnegie Coal Co., Pittsburgh, Pa.
W. A. Bishop, G. S. Pocahontas Cons. Collieries, Pocahontas, Va.
F. W. Whiteside, Chief Engineer, Victor American Fuel Co., Denver, Colo.
Jas. Needham, General Manager, St. Paul Coal Co., Chicago, Ill.
F. G. Morris, G. S. Coal Mines, Republic Iron & Steel Co., Sayreton, Ala.
M. A. Kendall, Chief Engineer, Stephens-Adamson Mfg. Co., Aurora, Ill.

THE IRONTON

STORAGE BATTERY LOCOMOTIVE

Hundreds of users have found it dependable and efficient, Gathering and entry haulage costs reduced 15 per cent to 50 per cent

THE IRONTON ENGINE COMPANY, Main Office and Factory, Ironton, Ohio

HUNTINGTON, W. VA. Robson-Prichard Bldg. PHILADELPHIA 511 Widener Bldg. CHICAGO Caxton Bldg. 508 S. Dearborn St. DENVER Gas & Electric Bldg. LOUISVILLE, KY. 1110 Starks Bldg. PITTSBURGH 561-B Union Arcade Bldg. SEATTLE 1 Murion
Canadian Representative, Powley & Moody, Ltd., Goad Bldg., 105 Bond St., Toronto

JOHN BOYLE, JR.

Attorney-at-Law
Patents

B. S. in Mining Engineering and Metallurgy
16 years in the examining corps of the
U. S. Patent Office

OURAY BLDG., WASHINGTON, D. C.

Orvis C. Hoffman Leon H. Hoffman
DIAMOND-CORE-DRILLING
— CONTRACTORS —
HOFFMAN BROS.
PUNNSUTAWNEY, PA.
(Our Specialty—Testing Bituminous Coal Lands)
Up-To-Date Equipments Expert Drill Runners. Inquiries Solicited

AT YOUR SERVICE

If You Have

Business in Washington with any of the government departments, the American Mining Congress will be glad to serve its active members without charge, in any way consistent with its purposes, either in obtaining information, securing public documents, in advising as to the progress of legislation or in the consideration of complaints.

The American Mining Congress is an organization of service. Write us how we may serve you.

THE AMERICAN MINING CONGRESS

MUNSEY BUILDING, WASHINGTON, D. C.

ROTARY CAR-DUMPERS FOR MINE CARS (GRAVITY, ELECTRICAL OR PNEUMATIC DRIVE) "SOLIDCAR" SELF-DUMPING CAGES CAR CONTROL AND CAGING EQUIPMENT

BRAND CROSBY CHICAGO ILL. **CAR-DUMPER EQUIPMENT CO.** UNION ARCADE PITTSBURGH PA.

THE MECHANICAL SPRAGGER AUTOMATIC TRIP CONTROL EQUIPMENT ROTARY CAR-DUMPERS FOR STANDARD GAUGE RAILROAD CARS

"See Information in Keystone Mining Catalog"

SCREENS OF ALL KINDS

Chicago Perforating Co.
2443 West 24th Place
Tel. Canal 1488 CHICAGO, ILL.



WE-FU-GO AND SCAIFE

WATER

PURIFICATION SYSTEMS
SOFTENING & FILTRATION
FOR BOILER FEED AND
ALL INDUSTRIAL USES

WM. B. SCAIFE & SONS CO. PITTSBURGH, PA.

OFFICERS AND COMMITTEES, 1922—(Continued)

Warren R. Roberts, Wrigley Building, Chicago, Ill.
 Rudolph H. Kahlisch, Asst. to Chief Mechanical
 Engineer, U. S. Bureau of Mines, Washington, D. C.
 Hobbs Bell Sales Chemist, U. S. Testing Co.,
 316 Hudson St., New York City

Underground Power TransmissionA. B. Kiser, *Chairman*

Harry M. Warren, Electrical Engineer, D. L. & W.
 R. R., Scranton, Pa.
 W. A. Chandler, care of Hudson Coal Co., Scranton,
 Pa.
 R. L. Kingsland, General Superintendent, P. & M.
 Dept., Cons. Coal Co., Fairmont, W. Va.
 Carl Lee, Electrical Engineer, Peabody Coal Co.,
 McCormick Bl., Chicago, Ill.
 L. C. Isley, 4800 Forbes St., Pittsburgh, Pa. (Bureau
 of Mines.)

Power EquipmentK. A. Pauly, *Chairman*

D. C. McKeenam, Box 913, Union Pacific Coal Co.,
 Rock Springs, Wyo.
 G. S. Thompson, Colorado Fuel & Iron Co., Pueblo,
 Colo.
 H. F. Randolph, Cons. Engr., 2330 Oliver Bldg.,
 Pittsburgh, Pa.
 M. D. Kirk, Pittsburgh Terminal R. R. Coal Co.,
 Wabash Bl., Pittsburgh, Pa.
 R. W. E. Moore, Westinghouse Electric & Manufacturing
 Co., E. Pittsburgh, Pa.
 R. L. Kingsland, Consolidated Coal Co., Fraimont,
 W. Va.
 W. C. Shunk, Stonega Coal & Coke Co., Big Stone
 Gap, Va.
 J. T. Jennings, Philadelphia & Reading Coal &
 Iron Co., Pottsville, Pa.
 W. C. Adams, with Allen & Garcia, Chicago, Ill.
 O. P. Hood, Chief Mechanical Engineer, Bureau
 of Mines, Washington, D. C.
 Graham Bright, Westinghouse Electric & Manufacturing
 Co., Pittsburgh, Pa.
 A. J. Nicht, Allis-Chalmers, Milwaukee, Wis.
 Stephen H. Green, Pacific Coast Coal Co., Seattle,
 Wash.
 Charles Legrand, Phelps Dodge Corp., Douglas,
 Ariz.
 Martin J. Lide, Cons. Engr., Birmingham, Ala.
 C. D. Woodward, Chief Electrical Engineer Anaconda
 Copper Mining Co., Butte, Mont.

Mine TimbersR. L. Adams, *Chairman*

N. A. Barnhart, Bertha Coal Co., Pittsburgh, Pa.
 B. C. Collier, Cement-Gun Co., Allentown, Pa.
 Geo. T. Stevens, Clinchfield Coal Corp., Dante, Va.
 George M. Hunt, Forest Products Laboratory,
 Madison, Wis.
 D. A. Stout, Mgr., Fuel Dept., Colorado Fuel &
 Iron Co., Pueblo, Colo.
 Chas. N. Perrin, National Hardwood Lumber
 Ass'n., 1100 Seneca St., Buffalo, N. Y.

Welfare*(In process of organization)***Advisory Committee on Safety Codes**

S. W. Farnham, Goodman Mfg. Co., Chicago, Ill.—
 Representing Mining & Loading Equipment
 T. A. Parker, St. Louis Structural Steel Company,
 St. Louis, Mo.—Representing Underground
 Transportation
 L. D. Tracy, U. S. Bureau of Mines, Pittsburgh,
 Pa.—Representing Mine Drainage.
 Martin J. Lide, Consulting Engineer, Birmingham,
 Ala.—Representing Power Equipment
 A. B. Kiser, Pittsburgh Coal Co., Pittsburgh,
 Pa.—Representing Underground Power Transmission
 G. F. Osler, Carnegie Coal Co., Pittsburgh, Pa.—
 Representing Outside Coal Handling Equipment

METAL MINING BRANCH*General Committee*

Charles A. Mitke, Bisbee, Ariz., *Chairman*
 N. B. Braly, General Manager, North Butte Mining
 Co., 14 W. Granite St., Butte, Mont.
 William F. Dale, Asst. General Manager, Anaconda
 Copper Company, Butte, Mont.
 William Conibear, Inspector, Dept. of Safety,
 Cleveland-Cliffs Iron Co., Ishpeming, Mich.
 H. C. Goodrich, 1108 Desert Bank Bldg., Salt
 Lake City, Utah
 Gerald Sherman, Phelps-Dodge Corp., Douglas,
 Ariz.
 Lucien Eaton, Superintendent, Ishpeming District,
 Cleveland-Cliffs Iron Company, Ishpeming, Mich.
 T. O. McGrath, Shattuck Arizona Mining Co.,
 Bisbee, Ariz.
 Chas. F. Willis, Editor, Arizona Mining Journal,
 Phoenix, Ariz.

Welfare WorkChas. F. Willis, *Chairman*

E. I. Irwin, Homestake Mining Co., Lead, S. D.
 Starkey L. Annot, Plymouth Cons. Gold Mines,
 Baymouth, Calif.
 H. C. Horne, Phelps-Dodge Corp., Bisbee, Ariz.
 G. A. Stahl, 603 Symes Bldg., Denver, Colo.
 John L. Boardman, Butte, Mont.

Mine Drainage*(In process of organization)*

C. Mendelsohn, Master Mechanic, Old Dominion
 Co., Globe, Ariz.
 Wm. H. Gallagher, Jr., Chief Mech. Engr., Pick-
 ands Mather & Co., Duluth, Minn.
 W. N. Tanner, Mech. Engr., Anaconda Copper
 Co., Butte, Mont.
 O. D. McClure, Cleveland Cliffs Iron Co., Ishpeming,
 Mich.

Drilling Machines and Drill SteelN. B. Brady, *Chairman*

Arthur B. Foote, North Star Mines, Grass Valley,
 Calif.
 Arthur Notman, Superintendent, Mine Dept., Copper
 Queen Br., Phelps-Dodge Corp., Bisbee, Ariz.
 O. J. Egleston, Manager, U. S. Smelting, Refining
 & Mining Co., Kennett, Calif.
 C. S. Elayer, General Foreman, Arizona Commercial
 Mining Co., Globe, Ariz.
 J. A. Fulton, Idaho-Maryland Mines Co., Grass
 Valley, Calif.
 L. C. Bayles, Chief Engineer, Ingersoll-Rand Co.,
 Phillipsburg, N. J.
 H. Seamon, Efficiency Engineer, United Verde
 Copper Co., Jerome, Ariz.
 Ocha Potter, Superintendent, Superior Division,
 Calumet and Hecla Mining Co., Houghton, Mich.
 R. T. Murrill, Inspiration Cons. Copper Co., Inspiration,
 Ariz.
 George H. Gilman, 125 Prescott St., East Boston,
 Mass.
 Charles Lees, Superintendent, Iron Cap Copper
 Co., Copper Hill, Ariz.
 Charles A. Smith, Mine Superintendent, Ray Cons.
 Copper Co., Ray, Ariz.
 Roy Marks, Stone Engineer, Box 1676, United
 Verde Exten. Mining Co., Jerome, Ariz.
 Earl Hastings, 816 North Sixth Avenue, Phoenix,
 Ariz.
 Frank Aver, Mine Superintendent, Motezuma
 Copper Co., Pilares De Nacozari, Sonora, Mex.
 W. G. Scott, Superintendent, Coronado Mines, Arizona
 Copper Co., Ltd., Metcalf, Ariz.
 Charles Officer, Sullivan Machinery Co., Chicago,
 Ill.
 A. S. Uhler, Ingersoll-Rand Co., New York City
 George A. Shaw, Efficiency Engineer, Denver Rock
 Drill Manufacturing Co., Denver, Colo.
 H. T. Walsh, V. P., Sullivan Machinery Co., Chi-
 cago, Ill.
 R. A. Scott, S. M. Denver Rock Drill Mfg. Co.,
 Denver, Colo.

Bruce Yates, Homestake Mining Co., Lead, S. D.
 T. C. Baker, Asst. Gen'l Mgr., The Mexican
 Corp., Edificio LaMutua, Mexico City, Mexico.

Inner Committee**Drilling Machines and Drill Steel**

Frank Ayer, Superintendent, Motezuma Copper
 Co., Nacozari, Sonora, Mexico.
 H. Seamon, Drill Efficiency Engineer, United
 Verde Copper Co., Jerome, Ariz.
 Charles A. Smith, Superintendent, Ray Cons. Copper
 Co., Ray, Ariz.
 Arthur Notman, Superintendent, Copper Queen
 Br., Phelps-Dodge Corp., Bisbee, Ariz.
 George Gilman, 125 Prescott St., E. Boston, Mass.
 H. T. Walsh, Vice-President, Sullivan Machinery
 Co., Chicago, Ill.
 George A. Shaw, Efficiency Engineer, Denver Rock
 Drill Manufacturing Co., Denver, Colo.
 L. C. Bayles, Chief Engineer, Ingersoll-Rand Co.,
 Phillipsburg, N. J.

Underground TransportationWilliam B. Daly, *Chairman*

George H. Booth, Mechanical Engineer, Inspiration
 Cons. Copper Co., Inspiration, Ariz.
 Andover Svenson, Chief Engineer, United Verde
 Exten. Mining Co., Jerome, Ariz.
 E. M. Morris, Asst. Supt. of Mines, Anaconda Copper
 Mining Co., Butte, Mont.
 R. R. Boyd, Asst. Superintendent, Mine Dept.,
 Copper Mining Branch, Phelps-Dodge Corp., Bis-
 bee, Ariz.
 T. K. Scott, Chief Engineer, Box 100, Miami Cop-
 per Co., Miami, Ariz.
 H. T. Hamilton, Manager, Motezuma Copper Co.,
 Nacozari, Sonora, Mexico.
 R. E. Howe, Asst. General Manager, Cananea
 Cons. Copper Co., Cananea, Sonora, Mexico.
 D. S. Calland, Managing Director, Compania de
 Real de Monte de Pachuca, Pachuca, Hidalgo,
 Mexico.
 Robt. H. Dickson, Chief Engineer, Calumet & Ariz-
 ona Mining Co., Warren, Arizona
 Stanley A. Easton, Kellogg, Idaho
 John Kiddie, Arizona Copper Co., Morenci, Ariz.
 Ole Hallinby, Inaselle Mine, Calumet & Hecla
 Mining Co., Calumet, Mich.
 C. A. Lantz, Gen'l Mgr., Cia de Santa Gertrudis,
 Pachuca, Mexico

Fire Fighting EquipmentWilliam Conibear, *Chairman*

J. T. Young, Safety Inspector, Arizona Copper
 Company, Morenci, Ariz.
 Orr Woodburn, Safety First Director, Globe-Miami
 District, Globe, Ariz.

A. A. Kroghdahl, Safety Engineer, Oliver Iron Min-
 ing Co., Virginia, Minn.

Guy J. Johnson, Safety Engineer, Homestake Min-
 ing Company, Lead, S. Dak.
 H. J. Rahilly, Superintendent, Mine Fire & Hy-
 draulic Filling Dept., Anaconda Copper Mining
 Company, Butte, Mont.
 Byron O. Pickard, District Mining Engineer, Bu-
 reau of Mines, Berkeley, Calif.
 C. W. Moon, Safety Inspector, Phelps-Dodge Cor-
 poration, Bisbee, Ariz.

Steam Shovel EquipmentH. C. Goodrich, *Chairman*

Robert E. Tally, General Superintendent, United
 Verde Copper Company, Clarkdale, Ariz.
 G. W. Barnhart, Manager, San Francisco Branch,
 Marion Steam Shovel Co., San Francisco, Calif.
 C. B. Lakanen, General Manager, Nevada Cons.
 Copper Co., McGill, Nev.
 H. G. S. Anderson, Mining & Metallurgical Engi-
 neer, Hurley, N. Mex.
 T. A. Snyder, Bucyrus Co., Milwaukee, Wis.
 George Mier, Phelps-Dodge Corp., Bisbee, Ariz.
 M. Curley, Gen'l Supt., New Cornelia Copper Co.,
 Ajo, Arizona.

Mine VentilationCharles A. Mitke, *Chairman* (Temporary)

A. C. Stoddard, Chief Engineer, Inspiration Cons.
 Copper Co., Box 15, Inspiration, Ariz.
 D. Harrington, care Bureau of Mines, Denver,
 Colo.
 Norman G. Hardy, Chief Mechanical Engineer,
 Smelter Dept., Arizona Copper Co., Clifton, Ariz.
 W. A. Rowe, Chief Engineer, American Blower
 Co., Detroit, Mich.
 E. B. Williams, Manager, Mine Fan Dept., B. F.
 Sturtevant Company, Hyde Park, Boston, Mass.
 Robert N. Bell, State Mine Inspector, Boise, Idaho
 F. L. Stone, care General Electric Co., Schenec-
 tady, N. Y.
 O. E. Legrand, Consulting Engineer, Phelps-Dodge
 Corp., Douglas, Ariz.
 O. K. Dyer, Buffalo Forge Company, Buffalo, N. Y.
 Don M. Rait, Asst. Superintendent of Mines, Calu-
 met and Arizona Mining Co., Warren, Ariz.
 A. S. Richardson, Chief of Ventilating Depart-
 ment Anaconda Copper Mining Co., Drawer
 1375, Butte, Mont.
 Walter C. Browning, Magma Copper, Superior,
 Ariz.

Mechanical Loading UndergroundLucien Eaton, *Chairman*

H. E. Billington, Manager of Sales, The Thew
 Shovel Co., Lorain, Ohio
 J. H. Hensley, Mine Superintendent, Miami Cop-
 per Company, Miami, Ariz.
 H. DeWitt Smith, Superintendent of Mines, United
 Verde Copper Co., Jerome, Ariz.
 William Whaley, General Manager, Myers-Whaley
 Co., Knoxville, Tenn.
 E. E. Whitely, Calumet & Arizona Mining Co.,
 Warren, Ariz.
 Karl Baumgartner, U. S. Bureau of Mines, St.
 Louis, Mo.

Mine TimbersGerald Sherman, *Chairman*

W. G. McBride, General Manager, Old Dominion
 Co., Globe, Ariz.
 Ira B. Joralemon, Asst. General Manager, Calumet
 & Arizona Mining Co., Warren, Ariz.
 Felix McDonald, Mines Superintendent, Inspira-
 tion Cons. Copper Co., Inspiration, Ariz.
 John Kiddie, Division Superintendent, Arizona
 Copper Company, Morenci, Ariz.
 W. S. Boyd, Manager, Ray Cons. Copper Co., Ray,
 Ariz.
 T. Evans, General Supt., Cananea Cons. Copper
 Co., Cananea, Sonora, Mexico
 C. L. Berrien, Anaconda Copper Co., Butte, Mont.
 George M. Hunt, Forest Products Laboratory,
 Madison, Wis.
 G. R. Jackson, Supt., Negaunee Mine, Cleveland
 Cliffs Iron Co., Negaunee, Mich.

Mine AccountingT. O. McGrath, *Chairman*

L. S. Cates, General Mgr., Utah Copper Co., Salt
 Lake City, Utah
 J. C. Dick, Salt Lake City, Utah
 H. H. Miller, General Auditor, Hercules Mining
 Co., Wallace, Idaho
 H. L. Norton, Phelps Corporation, Douglas, Ariz.
 Harry Vivian, Chief Engineer, Calumet and Hecla
 Mining Co., Calumet, Mich.
 L. K. Diffenderfer, Treasurer, Vanadium Corp.,
 120 Broadway, New York City.
 George Young, Cananea, Sonora, Mexico
 H. B. Fernald, 54 Wall St., New York City

Joint Publicity Committee

Representing Coal Mining Branch:

Ralph Becker, Evanston, Ill.
 C. H. Trik, Jeffrey Mfg. Co., Columbus, Ohio
 Representing Metal Mining Branch:
 Chas. F. Willis, Phoenix, Ariz.
 T. O. McGrath, Bisbee, Ariz.

MANGANESE
 ZINC
 MAGNESITE
 BISMUTH
 POTASH
 CADMIUM
 MOLYBDENUM
 BARYTES
 MONAZITE
 LEAD
 PYRITES
 FLUORSPAR
 TUNGSTEN
 GRAPHITE
 CHROMITE
 ANTIMONY
 QUICKSILVER
 ARSENIC
 MICA
 ASBESTOS

THE DIVISION OF MINERAL TARIFFS



THE AMERICAN MINING CONGRESS

Specializes in the problems surrounding the production of these minerals. It presents to the Congress of the United States facts upon which are based the arguments for a protective tariff.

All of these industries employ American labor at American wage scales. If they are to compete with foreign production they must have tariff protection.

The services of this Division—through its Chief—Herbert Wilson Smith, are at the disposal of producers and those interested in the development of these industries.

Information upon any phase of the Division's work gladly given. Address all communications

THE AMERICAN MINING CONGRESS THE DIVISION OF MINERAL TARIFFS

MUNSEY BUILDING

WASHINGTON, D. C.

NEW YORK
No. 1870 Hudson
Terminal Building
Courtland 3354

CLEVELAND
E. 38th Street and
Lakeside Ave.
Prospect 1776

DETROIT
3-140 General Motors
Building
Market 5627

WHOLESALE COAL COMPANY

General Offices:

Chamber of Commerce Building, Pittsburgh

Bell Phones: Grant 6920-2-3-4

P. & A. Phone: Main 1390

CORRY, PA.
145 N. Center St.
Phone 262-M

COVINGTON, KY.
Lawyers Building
South 6692

SMITH FALLS,
ONTARIO
No. 44 Main Street
Phone 107



MINERS AND SHIPPERS

Stonega Coal

A High-Grade Steam and By-Product Coal
—low in sulphur and ash

Roda Coal

Unexcelled for the manufacture of Gas and
By-Product purposes

Stonega Coke

A Superior Foundry and Furnace Coke

Roda Coke

In extensive use for Water Gas manufacture
and Metallurgical purposes. Low in Sulphur,
Ash and Phosphorus

BUNKER COAL

SUPPLIED AT

Charleston, S. C.—Savannah, Ga.—Jacksonville, Fla.

EXPORT and COASTWISE COAL

LOADED AT

Charleston, S. C.—Norfolk, Va.

STONEGA COKE & COAL COMPANY, Inc.

SPARTANBURG, S. C.
NEW YORK

BIG STONE GAP, VA.
PHILADELPHIA, PA.

CHARLESTON, S. C.
NORFOLK, VA.

Sold by

CLINCHFIELD FUEL COMPANY, Spartanburg, S. C.

“Clinchfield”

Mined by

CLINCHFIELD COAL CORPORATION, Dante, Va.

When in Washington

Let us be of Service

MEMBERS CONFERENCE ROOM



At Your Disposal—Any or All

The Tax Division
 Bureau of Mining Economics
 Proper Contact Government
 Departments
 Legal Division
 Library
 Stenographic Service

OF

Division of Mineral Tariffs
 Information Service Division
 Standardization Division
 Precious & Rare Metals Division
 The Mining Congress Journal
 Hotel Reservations

The American Mining Congress
Munsey Building *Washington, D. C.*

Admission Fee \$15.00
Annual Dues 10.00

Organized, 1898
24 Years of Service

THORNE, NEALE & COMPANY., Inc.

FRANKLIN BANK BUILDING
1416 CHESTNUT STREET—9 A. M. to 4 P. M.
PHILADELPHIA, PA.

MINERS' AGENTS AND WHOLESALE DEALERS

Anthracite **COAL** *Bituminous*

ANTHRACITE COLLIERIES

Mt. Lookout
Sterrick Creek

Harry E
Northwest

Forty Fort
Lackawanna

New Castle
Buck Run

Locust Run
(Washery)

Pardee Bros. & Co. — Lattimer Lehigh

BITUMINOUS

Sonman, South Fork District—Low volatile, low ash, low sulphur

Smithing—1 1-4 in. screened

Fairmont

— Quemahoning —

Indiana County

NEW YORK OFFICE: 17 BATTERY PLACE

Branch Offices: Baltimore

Buffalo

Chicago

Scranton, Pa.

Mauch Chunk, Pa.

THE LEHIGH COAL AND NAVIGATION COMPANY

Miners
and
Shippers



For Over
a
Century

1820

ANTHRACITE

1922

“The Best Since 1820”

437 CHESTNUT STREET

-

PHILADELPHIA, PENNSYLVANIA

The American Mining Congress

Specialized Service



The DIVISION OF TAXATION

The DIVISION OF MINERAL TARIFFS

The DIVISION OF PRECIOUS AND RARE
MINERALS

The BUREAU OF MINING ECONOMICS

The DAILY INFORMATION SERVICE

The STANDARDIZATION DIVISION

The MINING CONGRESS JOURNAL



Consult Us

MUNSEY BUILDING

WASHINGTON, D. C.

INDEX TO ADVERTISERS

Allis Chalmers Manufacturing Company.....	14	Irrington Smelting & Refining Works.....	27
Ameling Prospecting Company, H. R.....	27	Jacobsen & Schraeder, Inc.....	Cover
American Cyanamid Company.....	4	Jeffrey Manufacturing Company.....	Cover
American Mine Door Company.....	29	Lehigh Coal and Navigation Company.....	38
American Steel and Wire Company.....	8	Leschen & Sons Rope Company, A.....	8
American Zinc, Lead and Smelting Company.....	20	Lidgerwood Mfg. Company.....	16
Anaconda Copper Mining Company.....	14	Lende Air Products Company, The.....	23
Atlas Powder Company.....	15	Lunkenheimer Company, The.....	27
Boyle, John.....	33	Morse Chain Company.....	9
Car Dumper and Equipment Company.....	33	New York Engineering Company.....	16
Central Frog & Switch Company.....	27	Ohio Brass Company.....	25
Chicago Perforating Company.....	33	Pennsylvania Smelting Company.....	29
Clinchfield Coal Corporation.....	36	Phelps Dodge Corporation.....	29
Connellsville Mfg. & Mine Supply Company.....	27	Roberts & Schaefer Company.....	29
Denver Rock Drill Mfg. Company.....	3	Roebing's Sons Company, John A.....	27
DuPont de Nemours & Company, E. I.....	22	Roessler & Hasslacher Chemical Company.....	6
Fleming & Sons Company, J. R.....	25	Scaife & Sons Company, William B.....	33
General Electric Company.....	21	Standard Oil Company.....	10
Golden-Anderson Valve Specialty Co.....	7	Stonega Coke & Coal Company.....	36
Goodman Mfg. Company.....	11	Stonehouse Steel Sign Company.....	31
Hercules Powder Company.....	17-31	Streeter-Amet Weighing & Recording Company.....	12
Hockensmith Wheel & Mine Car Company.....	25	Taylor Instrument Companies.....	25
Hoffman Brothers.....	33	Thorne, Neale & Company.....	38
Holmes & Bros., Inc., Robert.....	12	United Metals Selling Company.....	20
Hunt & Company, Robert W.....	29	Vulcan Iron Works.....	13
Ingersoll-Rand Company.....	18	West Virginia Rail Company.....	31
Ironton Engine Company.....	33	Wholesale Coal Company.....	36
		Williamsport Wire Rope Company.....	19
		Wilmot Engineering Company.....	29

Statistics

How many bituminous coal mines have we?

How many workmen do they employ?

What is the total investment in this industry?

Do you know whether we have sufficient Manganese reserves to warrant their development?

What amount of capital already has been invested?

What grades of Manganese are produced in this country?

How does the amount of gold produced in 1920 compare with that of 1910?

And what is the influence of gold in the economic system?

What is the "Pittman Act," and how does it help the silver producer?

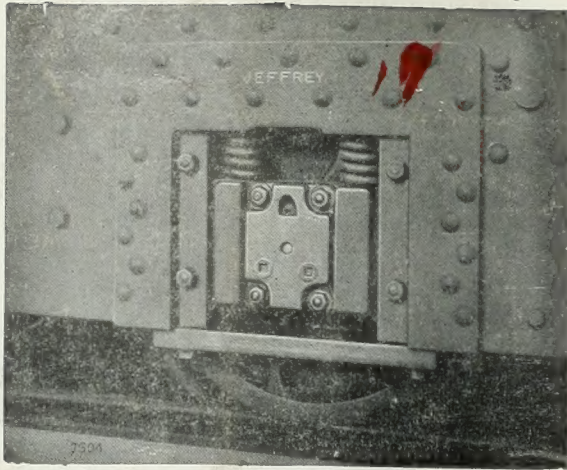
Are our petroleum reserves being depleted more rapidly than new production is discovered?

When should the Copper Industry resume normal operation?

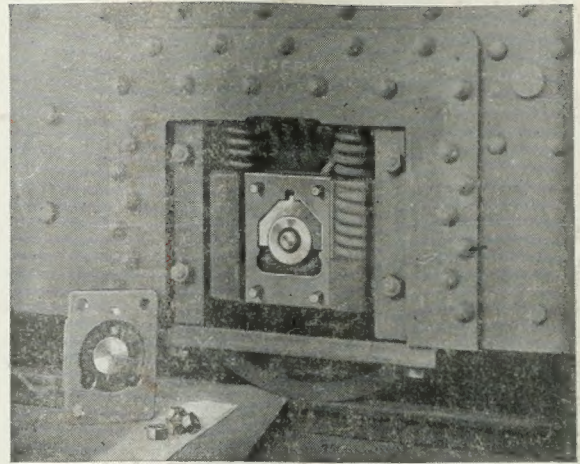
*THESE and many similar questions
are answered daily by*

THE BUREAU OF MINING ECONOMICS

**THE AMERICAN MINING CONGRESS
MUNSEY BUILDING WASHINGTON, D. C.**



Journal Box with Lid in place



Note Coil Springs on each side of axle, placed in pockets within Journal Box

Why Coil Springs Were Adopted as Standard for Jeffrey Mine Locomotives

A source of expense and trouble with the older type of Jeffrey Mine Locomotives was the flat leaf springs.

In a three-motor locomotive, for instance, were fourteen joints in the suspension mechanism on each side of the machine, or twenty-eight in all. A two-motor locomotive would have nine joints on each side, or eighteen in all. When the machine was in operation these joints were in constant action and in consequence soon wore out.

Another objection to flat springs was that they were more difficult to obtain than the plain coil or helical springs. They also cost more to replace. Still another and more serious fault was that they took up too much room and consequently weakened the side frame. For these and various other reasons, springs of this type were abandoned and coil springs adopted as a standard.

Why Two Springs Are Used to Each Axle

In the older designs one coil spring was placed on top of and in the center of each journal box. This method of suspension, however, was discarded, as the limited height of the locomotive frame made the space available much too small. Its application frequently entailed a choice between a spring entirely too short to give the desired flexibility and the cutting out of the side frame to such an extent as to render it liable to fracture.

In designing the journal boxes intended for use with Armorplate Frames one spring upon each side of the axle was provided. These were placed in pockets within the journal boxes, which pockets can be made of any depth to suit existing conditions, and consequently springs which are as long as may be desired can be used without making it necessary to cut away the side frame to any greater extent than will just allow the axle boxes to play up and down readily.

The Jeffrey Mfg. Co., 958-99 North Fourth Street, Columbus, Ohio

JEFFREY

MATERIAL HANDLING EQUIPMENT

RANDELL INCORPORATED, PRINTERS, WASHINGTON, D. C.